







Digitized by the Internet Archive  
in 2017 with funding from  
IMLS LG-70-15-0138-15

<https://archive.org/details/greenthumb3319unse>







83

# *The Green Thumb*

VOL. 33, NO. 1

SPRING, 1976



## THE COVER

The "Pike's Peak or Bust"  
section of the  
Garrison frieze

## THE GREEN THUMB

SPRING, 1976

VOL. THIRTY-THREE, NUMBER ONE

### *Editorial Committee*

Mrs. D. A. Andrews-Jones

Mrs. Walter B. Ash

Mrs. Paul A. Bloustein

Mrs. William H. Crisp

Dr. William G. Gambill, Jr.

Mrs. George H. Garrey

Mrs. Phil Hayward

Solange Huggins

Mrs. Robert M. Kosanke

Mrs. J. V. Petersen, *Chairman*

Dr. Moras L. Shubert

Miss Margaret Sikes

Pauline Roberts Steele

Dr. Janet L. Wingate

Dr. Helen Marsh Zeiner

Dr. Patricia G. Smith

Published by **Denver Botanic Gardens, 909 York Street, Denver, Colorado 80206.**

Sent free to all members of the organization. Junior membership \$3.00, Regular \$10.00, Participating \$30.00, Contributing \$50.00, Supporting \$100.00, Corporation \$200.00, Patron \$500.00, Life (single contribution) \$1,000.

By becoming a member of Denver Botanic Gardens, you will receive *THE GREEN THUMB* and the monthly *NEWSLETTER*. You will also have unlimited access to the use of the books in the Helen K. Fowler Library, located in Boettcher Memorial Center at 1005 York Street.

For further information write to Membership Chairman, Botanic Gardens House, 909 York Street, Denver, Colorado 80206, or call 297-2547.

*Copyright 1976 by Denver Botanic Gardens, Inc.*

# The Green Thumb

Copyright 1976

PATRICIA G. SMITH, Ph.D.

Editor

SPRING, 1976

Old-fashioned House Plants <i>Helen Marsh Zeiner</i> . . . . .	2
A Rose Is a Rose Is a Rose, or Is It? <i>Michael B. Pulman</i> . . . . .	8
Exotics of Colorado—Harison's Yellow Rose <i>Helen Marsh Zeiner</i> . . . . .	11
Shrubs for the High and Dry Country <i>Irene Mitchell</i> . . . . .	13
A Resolution in Honor of Mrs. Ruth Porter Waring <i>John C. Mitchell</i> for the Board of Trustees . . . . .	15
The Garrison Frieze <i>Virginia Shaw</i> . . . . .	16
Focus on <i>Brassaia actinophylla</i> <i>Peg Hayward</i> . . . . .	18
Plant Portraits <i>Bernice Petersen</i> . . . . .	20
Hildreth Garden—Room with a View <i>Glenn Park and Herbert R. Schaal</i> . . . . .	22
European Poison Hemlock ( <i>Conium maculatum</i> ) <i>Richard S. Mitchell and James R. Jackson</i> . . . . .	26
Meet Our New Conservatory Superintendent <i>Moras L. Shubert</i> . . . . .	30
Looks at Books <i>Glenn Park and William G. Gambill, Jr.</i> . . . . .	31



# *Old-fashioned*

# *House Plants*

*Helen Marsh Zeiner*

**W**indow gardening, such a popular hobby today, was equally popular in 1876 when Colorado became a state. It is a hobby that goes back to antiquity, and no one knows when the first house plants were grown. The ancient Romans grew potted plants, but they probably did not originate the idea. English publications about house plants appeared as early as 1600, indicating that indoor gardening was a well-established practice by that time.

Making plants a part of the decor of a room is common today, but it is not a new idea. *Window Gardening* published in 1872 discusses this idea at length and gives many suggestions for simple to extremely elaborate house plant displays.

Although today's house plants are often different from those of yesterday, lists of plants grown more than a hundred years ago contain many familiar names. Varieties, however, are generally different. Some old favorites do persist.

There are several reasons why plants today are not the same as those grown 100, 75, or even 50 years ago. One important reason is that conditions in homes are different. When poorly insulated houses lacked central heating and were heated by wood-burning or coal-burning stoves rather than by thermostatically controlled furnaces, houses in general were cooler. This was especially true at night. These cooler temperatures were good for most plants. Today many houses are too warm for the best growth of plants.

**I**t was the custom to keep a teakettle of water boiling on the stove, and the steam escaping into the air was beneficial to plants. Today plants often grow better in kitchens or bathrooms than in other parts of the house because the air is more humid in these rooms.

Styles in all things change, and this is true of plants. We may grow tired of a plant which has become so popular that we see it everywhere. This has happened in the past and explains why some old favorites are seldom seen today.

Plant explorers have discovered and introduced new plants which have replaced old plants. Before the introduction of plants such as the African violet, indoor gardeners used pansies and morning glories to provide colorful bloom.

Plants have been improved through selection and breeding, and new superior varieties have replaced old favorites. For example, *Window Gardening* (1872) named



41 varieties of zonal geraniums (*Pelargonium hortorum* Bailey). *Exotica* (1963) lists 190 varieties, including only four from the 1872 list: Distinction, Lady Cullum, Mountain of Snow, and Mrs. Pollack.

**P**riniples of house plant culture have changed very little over the years. Even soil mixes are basically the same—combinations of loamy soil, humus, and some material to facilitate drainage. Our grandmothers used leaf mould as humus and sand to improve drainage. Today we usually substitute peat for leaf mould and vermiculite or perlite for sand, as a matter of convenience and not because they are superior. Only in the control of insect pests are the changes great. However, then as now, prevention was considered the best cure. Washing with soap and water followed by a thorough rinsing is as good advice today as it was in 1872.

At the time Colorado became a state, house plants were grown in ornamental decorated pots. Today we tend to use very plain pots which do not detract from the plants themselves.

Hanging baskets, so very popular now, were also popular a hundred years ago. The baskets were different. Today wire baskets are generally used and the sides as well as the top are planted. Old-fashioned hanging baskets were showy, decorated containers made of a variety of materials. They were really modified pots and the plants, of necessity, were arranged in the top of the basket.

Have you made a miniature hanging basket out of a coconut shell? A hundred years ago people were doing the same thing.

Gardens in glass, particularly bottle gardens, are in style now, but the idea goes back to 1842 and Nathaniel Ward who devised glass-enclosed Wardian cases to grow ferns in London's smog.

More than a hundred years ago, people were forcing bulbs indoors. Hyacinths were forced in ornate bulb vases in contrast to the very simple glass bulb vases in common usage now. Pots of tulips, daffodils and other early spring bulbs were forced just as we force bulbs today. By the turn of the century, paper-white narcissus had become popular.

Of all the old-fashioned flowering house plants, geraniums come to mind first. Anyone could afford a geranium, often passed on from friend to friend by "slips" or cuttings. A variety of colors were available even a hundred years ago, but red was always a favorite. Double geraniums and dwarf forms were grown from early times. Geraniums grow best where it is cool and were well suited to small homes heated only by stoves. At night after the fires were banked or went out completely, rooms became quite cold. It was necessary



*Geranium*

to protect geraniums (and other plants) from frost by putting paper between the plants and the window pane, a chore that was never neglected.

Rose geraniums and other scented-leaved geraniums are very old-fashioned plants still grown today. Rose geranium leaves were sometimes added to apple jelly, or a leaf might be laid in an apple pie or in the bottom of a cake pan to give a subtle flavor. Scented-leaved geraniums have changed less over the years than zonal geraniums, perhaps because the flowers are smaller and less attractive and so there was less interest in them. Scented-leaved geraniums common more than a hundred years ago and still grown today are: *Pelargonium capitatum* Ait., rose geranium; *P. denticulatum* Jacq., cut-leaf rose geranium; *P. odoratissimum* Ait., apple-scented geranium; and a hybrid, Shrubland Pet.



*Impatiens*

popularity as an indoor plant.

Cyclamens were considered very choice house plants. We also consider them choice but difficult to maintain because they are cool-temperature plants.

Large begonias such as angel wing begonias and ricinifolias graced grandmother's parlor. Angel wing begonias with their long, narrow leaves arranged along the stems so that they resemble the wings of angels in old paintings were favorites. Angel wings are a hybrid group derived from *Begonia coccinea* Hook., first discovered in 1784. Ricinifolia has heavy stems and very large leaves with petioles ringed with red hairs. This plant results from a very old cross made in England in 1847 between *B. heracleifolia* Cham. & Schlecht. and *B. nelumbiifolia* Cham. & Schlecht. It is called ricinifolia because the leaves resemble those of the castor bean,

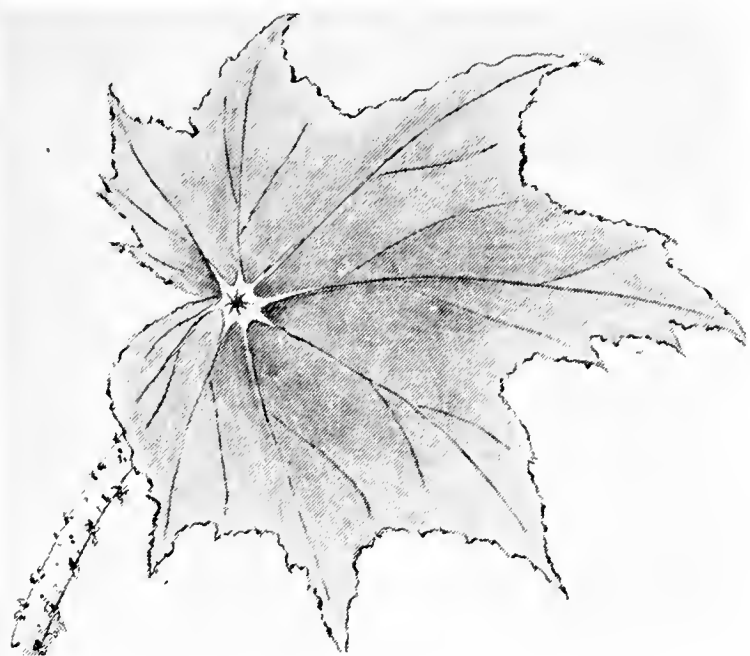


*Angel wing begonia*



*Ricinus*, and the botanical name is *B. ricinifolia* A. Dietr. Ricinifolia has changed very little over the years.

Rex begonias (*Begonia rex* Putz.) with their beautiful leaves were treasures from the time that they were introduced to Belgium from India in 1856. In 1872, *Window Gardening* considered them the most desirable begonia. Hybridizing began as soon as the plant was introduced and has never stopped. Today we have countless varieties of rex begonias derived from *B. rex-cultorum* Bailey, a hybrid group originating from the original *B. rex* and known as the rex begonias of cultivators. Rex begonias today are considered by many to be the most beautiful but also the most difficult of all begonias to grow.



*Ricinifolia*



*Christmas cactus*

Primroses, including *Primula obconica* Hance, are old-fashioned flowering house plants not usually grown as house plants today.

Fuchsias are now largely used as bedding plants, but 100 years ago they were prized house plants. It is said that they were introduced to the public in England in 1774 by a florist who obtained the plant from a woman whose son, a sailor, had brought it to her from one of his journeys. The first fuchsias were so expensive that they were only for the very rich. Today they are within the reach of everyone and there are many improved varieties which have replaced inferior older fuchsias.

Christmas cactus was loved for its beautiful flowers appearing at Christmas time. This was often a huge plant grown in the same pot for years.

Poinsettias were prized plants for the holidays. Old-fashioned poinsettias were far different from those grown today. They were tall and rather spindly and held their red bracts and green leaves only a short time. In recent years, great improvements have been made in poinsettias. They are short and stocky and hold their leaves and red bracts for long periods of time. Poinsettias are now available in creamy whites and soft pinks as well as traditional red. Grandmother would be amazed to see today's poinsettias!

Jerusalem cherry with its bright red fruits also appeared at Christmas time. We still use Jerusalem cherries but less frequently than our mothers and grandmothers.

Foliage plants have always been an important part of the window garden. Aspidistra or cast-iron plant was a very good and very durable house plant which went out of style. The last few years one seldom saw an aspidistra, but they may be on their way back—recently they have been advertised by some florists.

**A**lmost everyone had a fern of some kind. Often it was a Boston fern, *Nephrolepis exalta* Schott., or one of its lacy varieties. Some of the varieties of Boston fern developed in the early 1900's are still used. Frequently one large fern in a clay pot was enclosed in an ornamental jardiniere and displayed on a stand or pedestal made for the purpose; sometimes several ferns were planted in a fernery which was essentially a long planter on legs; sometimes an entire window was filled with ferns. Ferns have never been considered easy to grow, and a hundred years ago the reasons were the same as today—hot, dry air.

Asparagus ferns have been grown for many years as fern substitutes where true ferns do not grow well. *Asparagus sprengeri* Regel. and *A. plumosus* Baker were both used and are still popular today.

The rubber plant, *Ficus elastica* Roxb., is a durable old house plant still used today. It was popular 100 years ago, especially as a background plant in groups of plants.

Jade trees, very large specimens of *Crassula argentea* Thunb., were highly regarded by our grandmothers. *Crassula argentea* is used today, but we seldom see the very large old plants called jade trees. This plant was listed in London's *Encyclopedia of Plants* published in England in 1836.

Large palms of several kinds were used in spacious homes, especially in groups of plants. For parties, it was the custom to rent palms to make a lovely display. We use palms today, but we use primarily small varieties.

Lemon verbena or sweet verbena, *Aloysia triphylla* Britt., was grown for its shiny, sweet-scented foliage.

Lemon and orange trees were grown both for their foliage, their sweet-scented flowers, and their attractive fruit. We grow improved varieties today.

Norfolk Island pine (*Araucaria excelsa* R. Br.) which thrived in cooler homes, declined as houses became too warm. Now that we have a better understanding of the requirements of this plant, it is again becoming popular.

**O**ld-fashioned vines included the wandering Jew, *Zebrina pendula* Schnizl., which we still use today in improved varieties. German ivy, *Senecio mikanioides* Otto, was seen frequently. It was valued both for its ivy-like leaves and its yellow flowers. Although we still use German ivy, it is no longer a common house plant. Hoyas were just coming into use 100 years ago. Sweet potato vines were popular then as now.

Florists' smilax, actually an asparagus (*Asparagus asparagoides* Wight.) was a popular vine. It had pretty, glossy leaves and could be trained to climb on a wire or other support or to wind around pictures as a living frame. Around the turn of the century it was the style to have several pots of smilax arranged in a row in front of a window and trained on wires reaching to the top of the window or to the ceiling to make a living curtain.

English ivy, *Hedera helix* L., was called the poor man's vine because it would grow for almost everyone, was easily obtainable and inexpensive. It was considered "the easiest of all vines for indoor use. A single root has been known to wreath a bow window with thick garlands, and then strike off into lovely, independent paths along picture cords and above cornices, till the room seemed all a-bud, like Aaron's rod. It will cover a screen of wire, curtain a curtainless window, festoon a pillar, frame a favorite picture, arch a door, climb and twist about a window sill, and swing in long looped tendrils from a bracket. There is no end to its beautiful uses." Many varieties of English ivy, unknown to our grandmothers, are available to us. Many are bushy plants with little tendency to climb.

**T**he list of old-fashioned plants is endless. Many are so familiar that we do not think of them as old-fashioned although they have been used for years. Consider spider plant or St. Bernard's lily (*Chlorophytum elatum* R. Br.), often seen in modern hanging baskets because of its long pendant runners with small plants at the ends and its pendant stalks of small white lily-like flowers. Plants used years ago were plain green, but now variegated varieties are most common.

Also consider crown of thorns with interesting thorny stalks and salmon-colored flower bracts; baby's tears, especially valued today for use in terrariums; colorful-leaved caladiums available today in a myriad of varieties; and the strawberry begonia or strawberry geranium, neither a begonia nor a geranium but a saxifrage (*Saxifraga sarmentosa* L.), which puts out strawberry-like runners. It is just as useful today for small hanging baskets as it was a generation ago.

Although we have many excellent "new" plants available to us today, let's not forget the old-fashioned plants which have stood the test of time and have proved themselves worthy of use in modern window gardens.

### References

- Buxton, Bessie. R. *Begonias and How to Grow Them*. New York: Oxford University Press, 1946.  
Free, Montague. *All About House Plants*. New York: Doubleday & Company, 1951.  
Graf, A. B. *Exotica*. Rutherford, N. J.: Roehrs Company, 1963.  
Williams, Henry T. *Window Gardening*. New York: Henry T. Williams, Publisher, 1872.



# A rose is a rose is a rose – or is it?

*Michael B. Pulman*

One way or another, I suppose I have been conscious of roses from a very early age. When I was a child, my numerous maternal uncles and aunts seem, in retrospect, always to have been talking about a certain Alberic. It was, I was told repeatedly, in flower for all the receptions held in my grandmother's walled garden after their respective weddings—ceremonies timed, I then presumed, with that happy circumstance in mind rather than for what I eventually realized were much more unesthetic, certainly less romantic reasons. At my parents' home, in a much milder climate than our Western one, my father grew "bush roses" I now know were hybrid teas.

It has only been over the course of the past couple of years, however, since I became involved in the problems of designing and stocking a garden in the very different conditions prevailing in Colorado, that I have developed a serious interest in the genus *Rosa*. During those two years, I have discovered a whole world of beauty and delectation I previously never dreamed existed; and I seem to have come across it at precisely the moment when it seems possible it may be on the verge of slipping away. I am speaking of the world of the "old roses"—the predecessors of our Charlotte Armstrongs, our Tropicanas, our Ore-golds: the newer, gaudier but less charming, infinitely popular yet notoriously troublesome garden plants that are the only things most people think of when they speak of roses in 1976.



The old roses, generally speaking, fall into several categories. There are the Damasks, "red and white" and sometimes both, familiar to Shakespeare, who also makes dramatic reference to the Gallica Red Rose of Lancaster, the Alba White Rose of York, and the ordinary Eglantine (*Rosa eglanteria*). One variety of the Four Seasons Rose was well known to the Romans as the "Rose of Paestum." Austrian Copper, known hereabouts as "the DU Rose," is known to have existed at least as early as the sixteenth century and probably came originally from Persia rather than the heartland of the Holy Roman Empire, which gave it its name and where it apparently naturalized long ago.

The commonest and probably the loveliest of the Moss Roses dates from 1696. The Hybrid Perpetuals, much more recent, but still quite definitely antique in the modern sense of the word, are in many respects, typical products of the nineteenth century that witnessed their appearance. They are at least as permeated by the spirit of Queen Victoria as the antimacassars, knick-knacks, and fancifully framed photographs among which they normally ended their days as the favorite cut flowers of the day. Overall, the old roses bring back the past perhaps more vividly and certainly more

colorfully than many a row of history books.

**Please do not misunderstand** me. I am not at all interested in the old roses for sentimental reasons. I am, as a professional historian, to a degree fascinated by them as botanical phenomena with more directly traceable pedigrees than most. But I grow them primarily because many of them are—reference works tell me or several I already know from experience—admirably suited for trouble-free cultivation in our rather peculiar climatic conditions.

Like the natives, they are hardy, drought-resistant and highly unsusceptible to disease. My White Rose of York, for example, did not lose a single twig to frost last winter—not even as a result of the deep freeze that hit us in April and killed my Hybrid Teas, without exception, right down to the ground. Now, at the very end of summer, the White Rose makes the latter, with their unsprayed and therefore curled, spotted and mildewed leaves and aborted buds, look like standing corpses by comparison with its glowing life. Its hips are especially eye-catching. I have a thriving Great Maiden's Blush, two years old and over six feet high, that has to make do in a part of the yard so often forgotten at watering time it's known as the desert. I should like, in another article, to report on other varieties that are doing just as well.

**If the old roses are as wonderful** as obviously I am trying to make them sound, the question might well be asked as to why they are not better known and more popular. The reason is at least two-fold. The "old roses" *are* old—that is, they passed out of fashion long ago; and everyone knows that few things are deader and more quickly forgotten than a fad or style that has had its day, however long it may have lasted in its time.

They are also difficult to find, let alone acquire. Local sources stock a few

standbys, such as Harison's Yellow, Magnifica, Hansa, and Austrian Copper, but not many more. Two years ago, in response to my enquiry, the American Rose Society sent me the names of some mail-order nurseries who, they said, could supply such material. One (Melvin E. Wyant, Johnnycake Ridge, Mentor, Ohio 44060) stocks a few older varieties, but specializes primarily in more recent types. Another (Tillotson's Roses, 802 Brown Valley Road, Watsonville, California 95076) is one of the most distinguished names in the field and a pleasure to do business with, but their list is comparatively short.

**The only other catalog** that is anything like comprehensive—the only one, other than Tillotson's in which one feels any real assurance of finding a rose listed by Graham Stuart Thomas (*the* expert on the subject) in one of his incomparably informative books—is that put out by Joseph J. Kern, Box 33, Mentor, Ohio, 44060. This is a slight but meaty little publication, whose listed names are redolent with the glory of a record stretching back not only beyond the beginnings of historic time but well outside the boundaries of Europe and America as well. Each year I have ordered and each successive season my garden had taken on new dimensions of scent and color as a result.

As of now, though, I find myself and my hitherto rather vague and unformulated hopes of helping to spread the word about the virtues of the old roses to other gardeners faced with two problems; the one anticipated, the other not. To begin with, I am running out of room; but, even worse, the latest Kern's catalog informs me it is the last of its kind, implying that one of the best sources of supply is about to dry up. The latter is the more dismaying prospect, since (with an ingenuity that constantly surprises me, but which, I am equally constantly assured, all fanatics sooner or later find they have within themselves) I always seem to be able, when it comes to the crunch, to find room for "just one more." My yard,



apparently, is infinitely expandable; the disappearance of Kern's seems likely to make its actual ultimate capacity a point of purely academic interest. Where are the Omar Khayyams and Sir Thomas Liptons of future years to come from, I have been asking myself.

**There is surely hope, however.** Here in Denver we have a new Botanic Garden, which, like so many other young organizations, seems also to be a dynamic one. I know that money is a constant worry for such institutions, but such problems are rarely the really insoluble ones. To purchase one specimen of each of the entire Kern's stock of old roses hardy in this area would cost less than \$700 delivered). There are surely others besides myself who would be willing to contribute a few dollars to enable the Gardens to make such a purchase.

**Just think of the dividends** such an investment would pay us. We would, of

course, have a garden of old roses to visit and show off to our visitors and friends. In the long run we might even outshine such showplaces of the genus as London's Queen Mary's Garden or Paris's Bagatelle, but surely even in the short term there would be much more. Once established, the individual varieties could be propagated. It could, perhaps, be made a condition of donation that plants grown from cuttings—old roses do very well on their own roots, which is one reason they have survived their period of neglect—be made available at cost to those donors who can find that odd corner for them at home.

The trials of growing them at the Gardens, too, would save *us* from much error in investing blind in those variations which prove not to do as well as others. Perhaps not last or least of all, local nurseries might be talked into helping to popularize the old roses with the general public.



EDITOR'S NOTE:

The possibility of an Old Rose Garden at the Botan Gardens is under serious consideration.

# Exotics of Colorado —

## Harison's Yellow Rose



*Helen Marsh Zeiner*

Few exotics of Colorado are regarded with such genuine affection as Harison's yellow rose, that old-fashioned shrub rose which has become a symbol of times long past and a living memorial to those women who brought the plant here and nurtured it so well.

This long-time favorite rose is described as having small, open, semidouble, fragrant bright yellow flowers; strong canes often 6 feet high, and spreading; and rich green foliage with small leaflets. It is said to be a very vigorous, enduring shrub with profuse nonrecurring bloom.

Harison's yellow is a very old rose, first distributed commercially by the Prince Nursery, Flushing, New York, in 1830. It must have been an instant success, for it became extremely popular and its use spread rapidly, not only in this country, but also in other parts of the world.

The actual original of *Rosa harisonii* Rivers is in doubt. Some rosarians consider it to be a cross between *Rosa foetida* Herrm. and *R. spinosissima* L., while others say it is a cross between *R. spinosissima* and some unknown parent; still others feel that it is a chance seedling or sport of *R. spinosissima* and not a hybrid at all.

We may not know its ancestry with certainty, but we do know quite a bit about its early history.

It first appeared in the New York City garden of George Harison and his father, Richard Harison, both avid gardeners. Richard Harison died in 1829. How long before this rose appeared in the Harison garden, we do not know, but it is assumed that it had been growing there some time before it was made available commercially. Records indicate that the Harisons cultivated several varieties of *R. spinosissima* in their large garden, and it must have been involved in the ancestry of *Rosa harisonii* in one way or another.

The rose was named for George F. Harison, who was an attorney in New York City. Some accounts say that he was the Reverend Mr. Harison, a rector of Trinity Church in New York City, but other accounts say that records of the church do not confirm this. Family records, however, indicate that George Harison was indeed an attorney, that his health was poor, and that he was forced to carry on only a limited law practice and to spend much time outdoors. Gardening was not only a hobby but a therapy for him.

George Harison may have first given the rose to Thomas Hogg, a New York nurseryman from whom William Prince of Prince Nursery obtained the rose. It is said that Thomas Hogg did not have the facilities to propagate and distribute the rose, but he did sell a few plants as Hogg's yellow.

Harison's yellow rose is described as being very hardy and resistant to neglect, and its history shows that this is unquestionably true. The progress of our settlers westward across the country is paralleled by the progress of this rose. As they moved, the rose went with them, and there is hardly an old tumble-down

farmhouse in all the midwest that doesn't have a Harison's yellow rose clinging tenaciously to life and blooming faithfully each spring.

Harison's yellow moved with the early settlers not only because it was a favorite rose, but also because it was an easy rose to propagate, putting up suckers which were easy to transport and establish in a new home.

As the settlers came farther west, they brought this old much-loved rose with them. In Colorado, the women planted Harison's yellow rose around their cabins in mining camps, their homestead shacks on the plains or where ever they tried to make a home.

Today we can see very old yellow roses and their progeny in mining camps such as Central City and Georgetown. Look for Harison's yellow rose in the yards of kept-up homes and also in the yards of cabins long abandoned and gone to ruin; in the cemeteries; and in such places as the gardens of Central City Opera House. So popular was this rose—and so enduring—that it is almost a trademark of those by-gone days.

Harison's yellow rose has by no means outlived its usefulness. It makes a good addition to a shrub border and is useful as a background shrub. True, it blooms only once a year, but that wonderful profusion of fragrant yellow is worth the other months when the bush is only a thorny, non-descript rose.

Harison's yellow, which has proved so well that it can stand neglect, is a good choice for the garden where water is limited.

If you would like to read more about this interesting old rose, and particularly about its possible parentage, see *History of the Rose*, Roy Shepherd, available in the Helen Fowler Library at Denver Botanic Gardens.

Reprinted from *The Green Thumb*, Spring, 1970.



# Shrubs for the High & Dry Country

*Irene Mitchell*

In the rugged climate of the Rockies and High Plains, landscape shrubs must be like the heroines in Western movies—tough but beautiful.

Though the word tough may conjure up the image of a prickly, ugly-duckling plant, there are many attractive shrubs that will endure the drought, wind, hot summer sun, subzero winters, and alkaline soil of the mountain states.

Some shrubs are adapted to dry cold areas simply because they are natives of such places as Siberia or China. Many of them have small leaves that lose little moisture to the atmosphere.

By choosing carefully, the homeowner can have shrubs that provide flowers in spring and summer and attractive foliage or berries in fall and winter.

As with other plants, the key to success with shrubs is to plant them correctly. Dig a large enough hole to avoid cramping root systems. If soil is moderately poor, use a mixture of equal parts soil and sphagnum peat to fill in around the roots.

**Where soil is unusually claylike** and heavy, mix it with equal parts of peat and coarse sand before filling in the planting hole. Compost can be substituted for peat.

Newly planted shrubs need deep watering every seven to ten days. Once established, after about a year, these drought-proof shrubs will need deep watering only once every three weeks in dry seasons. Most of the following list of shrubs are available at local nurseries in the West, and mail-order firms can supply the less common ones.

Shrub roses can serve as specimen plants or they make superb screens and barriers through which few animals venture. Two that have proven their adaptability in this climate are *Rosa hugonis* Hemsl. (Father Hugo's rose) and the Austrian Copper rose, *Rosa foetida* var. *bicolor* Willm. Both may reach a height of seven feet eventually. *R. hugonis* is freer with bloom and bears sprays of single pale yellow blooms in late May. The Austrian Copper rose is named for its brilliant blossoms whose petals are orange inside and yellow on the reverse side.

**Another good screening plant** is bush honeysuckle, *Lonicera tatarica* L. This one will reach a height of nine feet, though it can be pruned heavily if necessary. There are a number of named cultivars with flowers in colors of white, pink, or red and fruits of red, yellow, or orange. Zabel's honeysuckle is a rugged cultivar that bears dark pink

blooms in late May and a profusion of red berries beloved by birds throughout the summer.

*Kolkwitzia amabilis* Graebn., also known as beauty bush, blooms best on sunny, dry sites where soil is poor. It is slow-growing to an eventual height of ten feet, and is covered with tiny, shell-pink trumpet flowers in early June.

**Useful for foliage and fruit effect** is the pale green Russian olive, (*Eleagnus angustifolia* L.). This is an ironclad plant whose silvery berries attract whole flocks of evening grosbeaks.

Smokebush, *Cotinus coggygia* Scop., is striking enough to serve as a specimen shrub in a front yard. It grows rather quickly to a height of 15 feet. The pinkish, plumose seed panicles are the chief attraction. The commonest kind produces foliage in shades of pink, bronze, and green with fluffy seed heads of pink shaded to bronze or brown for a rainbow effect. The cultivar *Purpureus* is even more impressive with its purple foliage and wine-colored seed heads. Both are hardy and drought-proof.

*Tamarix pentandra* Pall., or salt cedar, is also useful for dry locations, especially where soil is alkaline. Its feathery pink flower heads in midsummer complement the ferny foliage. It needs periodic pruning to keep it low and compact.

*Spiraea vanhouttei* Zabel is another dependable dry country performer, useful as hedge or screen, with arching sprays of white flowers in late May. Other good tall shrubs that endure drought are the staghorn sumacs with brilliant red fall coloring, *Pyracantha coccinea* Roem. (if given the protection of a wall, since it may not be hardy this far north), and columnar junipers (*Juniperus* Spp.).

**Among the shorter shrubs**, *Potentilla fruticosa* L. heads the list for easy care and immunity to bugs, disease, and bad weather. The variety *Gold Drop* bears golden yellow flowers from June to frost and remains a neat three-foot mound with almost no pruning.

In the same size range is *Chaenomeles lagenaria* Koidz., or flowering quince, formerly called *Cydonia*. The variety *Knaphill* remains under two feet, with symmetrical growth and bright red flowers in May.

Though the true hollies are a poor choice for this area, mountain gardeners can grow mahonia, to my mind a prettier shrub. *Mahonia aquifolium* Nutt., also called Oregon grape, grows about three feet tall and has lustrous holly-like leaves. It is a shrub for all seasons, with bright yellow clustered flowers in May, blue berries in summer, and bronze leaf coloring in late fall and early winter. It grows equally well in sun or shade.

**One of the latest-blooming shrubs** for dry, exposed situations is the September-blooming *Caryopteris incana* Miq., also known as blue spirea. The variety *Heavenly Blue* has feathery spikes of deep blue flowers. *Caryopteris incana* is compact enough to use in a sunny rock garden or at the top of a retaining wall. Like potentilla and quince, it is also attractive enough to use in a perennial border. It often dies back to the ground in severe winters, but in any case it should be pruned severely each spring to encourage heavier bloom.

A lesser-known shrub for the high and dry country is hypericum (pronounced hip-AIR-ee-kum). Like caryopteris, hypericum must be pruned nearly to the ground each spring, but it grows rapidly enough to begin blooming by early July.

*Hypericum* 'Sungold' is an attention-getting shrub about 20 inches high that bears two-inch yellow flowers from July to October. Each flower has a thick tuft of satiny yellow stamens in its center, producing an effect of pure sunshine. Its beaked, pointed seed pods remain attached all winter to give additional interest.

# A Resolution in honor of

## *MRS. RUTH PORTER WARING*

WHEREAS, Mrs. Ruth Porter Waring has for many years shown a great personal interest in the development of the Denver Botanic Gardens deriving from her own longstanding interest in plants, and

WHEREAS, Mrs. Waring, through her generosity has presented the house at 909 York Street as a headquarters building for the new Denver Botanic Gardens and has provided very generous support in many other ways, and

WHEREAS, Mrs. Waring has been serving with loyalty and vision as both a member of the Board of Trustees and as vice president of the Board for many years, and

WHEREAS, she has from its inception shown a particularly strong interest in the Children's Garden and has provided support for it in many ways, as well as serving on the Children's Garden Committee, and

WHEREAS, despite her desire for anonymity, we have long wished to recognize her encouragement and accomplishments on behalf of the Denver Botanic Gardens,

NOW, THEREFORE, BE IT RESOLVED that this Board of Trustees hereby *designates the Plains Garden as the Laura Smith Porter Plains Garden*, in honor of Mrs. Waring's mother, a pioneer citizen, who crossed the Great Plains to Denver in a covered wagon, and

BE IT FURTHER RESOLVED that the *children's gardens be named the Ruth Waring Children's Gardens*, and

BE IT FURTHER RESOLVED that we pay fitting tribute to a beloved Trustee, Associate, and distinguished citizen by inscribing this resolution as a permanent part of the minutes of the Denver Botanic Gardens, Inc. and forwarding a copy to members of her family.

For the Board of Trustees

By: *John C. Mitchell*  
President

---

The above resolution was presented to Mrs. Waring on the occasion of the Botanic Gardens Christmas party, December 16, 1975.

# The Garrison Frieze



*Virginia Shaw*

In the 1920's, "when the architect was closer to the artist," Denver architects William and Arthur Fisher and sculptor Robert Garrison worked together in designing many of Denver's most interesting buildings. Gracing a wall on the west side of the Denver Botanic Gardens is a Garrison work from a Fisher building: a series of plaques known as "The Covered Wagon" or "Pikes Peak or Bust" frieze. About half of the original frieze depicting the westward journey of pioneers to Denver is on the wall; the other half is lost. But the fact that another generation of Denverites has been given the privilege of seeing Garrison's frieze is due to the work of William Fisher's son, Mr. Alan Fisher.

"The Covered Wagon" frieze was carved for the Midland Federal Savings Building at Seventeenth and Glenarm streets when a Romanesque interpretation was agreed upon between architects and artist at the building's completion. The Romanesque style of architecture, found on several Fisher buildings in Denver, was used during the early Middle Ages from about A.D. 1050 to 1200, appearing most often on churches. Church-builders used round arches for windows, doors, and the spaces between the piers; and sculptors carved highly decorative figures on the piers and arches. So Garrison, besides carving the frieze that was placed between the second and third floors of Midland Savings, created stone pieces under the bank's entrance arch, which his students carved under his instructions.

The gargoyles he did for the top of the building are still there. But the ten arch pieces of settlers in their various trades, along with Garrison's frieze, came close to being lost to Denver. The frieze, in fact, was being thrown on the street during the renovation of Midland Savings in 1964. Mr. Fisher gathered the unbroken parts of the frieze, kept a large piece, and gave a large piece to Jane Garrison, the sculptor's daughter. A few years later both Mr. Fisher and Jane Garrison gave their pieces to the Botanic Gardens.

There are two copies of the frieze: the original terra cotta in the Gardens and a plaster copy in the Denver Art Museum. Modeled first in clay by Garrison, "The Covered Wagon" was then fired by the Denver Terra Cotta Company, a firm no longer





in existence. The plaques show the following: a Mississippi riverboat, a Mississippi farmer talking with his family about the opportunities in the West, and the family joining a wagon-train going west. Indians then attack the wagon-train, and after bravely defending themselves, the pioneers are rescued by the U.S. cavalry. The pioneers see to their wounded and bury their dead. The westward march continues with "Pikes Peak or Bust" as the pioneers' slogan. A food shortage occurs and a buffalo hunt takes place. The mountains are sighted (the women are shown kneeling in gratitude) and at last Denver, a small trading-post, is reached. The settlers dig for gold, gold is found, and commerce established.

Although Garrison's frieze, with its rich ornamentation, employs the Romanesque style, it also carries the flavor of the West. The figures, heavy and rounded, suggest the toil of the pioneer. They are, at the same time, cherubic and cumbersome.

One particularly interested in the Garrison frieze might want to see the work Garrison did for the Fisher building, South High School. Done in Italian Romanesque, the school has two grotesques atop the columns at the main entrance, a large, rounded griffin that is guardian of the school, and a clock decorated with the zodiac on the clock tower.

A most charming work of Garrison's is the circular medallion that is the equestrian seal for the original Polo Club. The large terra cotta seal shows Marco Polo, who faces us astride his horse, his stick raised.

There are many other works of Garrison's around Denver and more in New York, besides. In New York, Garrison was sculptor for John D. Rockefeller. There he did the sculpture for Riverside Church and the entrance panel at Rockefeller Center. Originally, Robert Garrison came from Fort Dodge, Iowa, where he was born in 1895. He studied under Gutzon Borglum, the sculptor who carved the presidents at Mount Rushmore, and who was a student of Rodin's.

The Denver Botanic Gardens is especially pleased to have Robert Garrison's "Covered Wagon" frieze. It is well worth the journey to the Gardens to see a piece of Colorado history and the work of a master.



*The farmer prepares his family for the long trek across the plains.*



# focus on

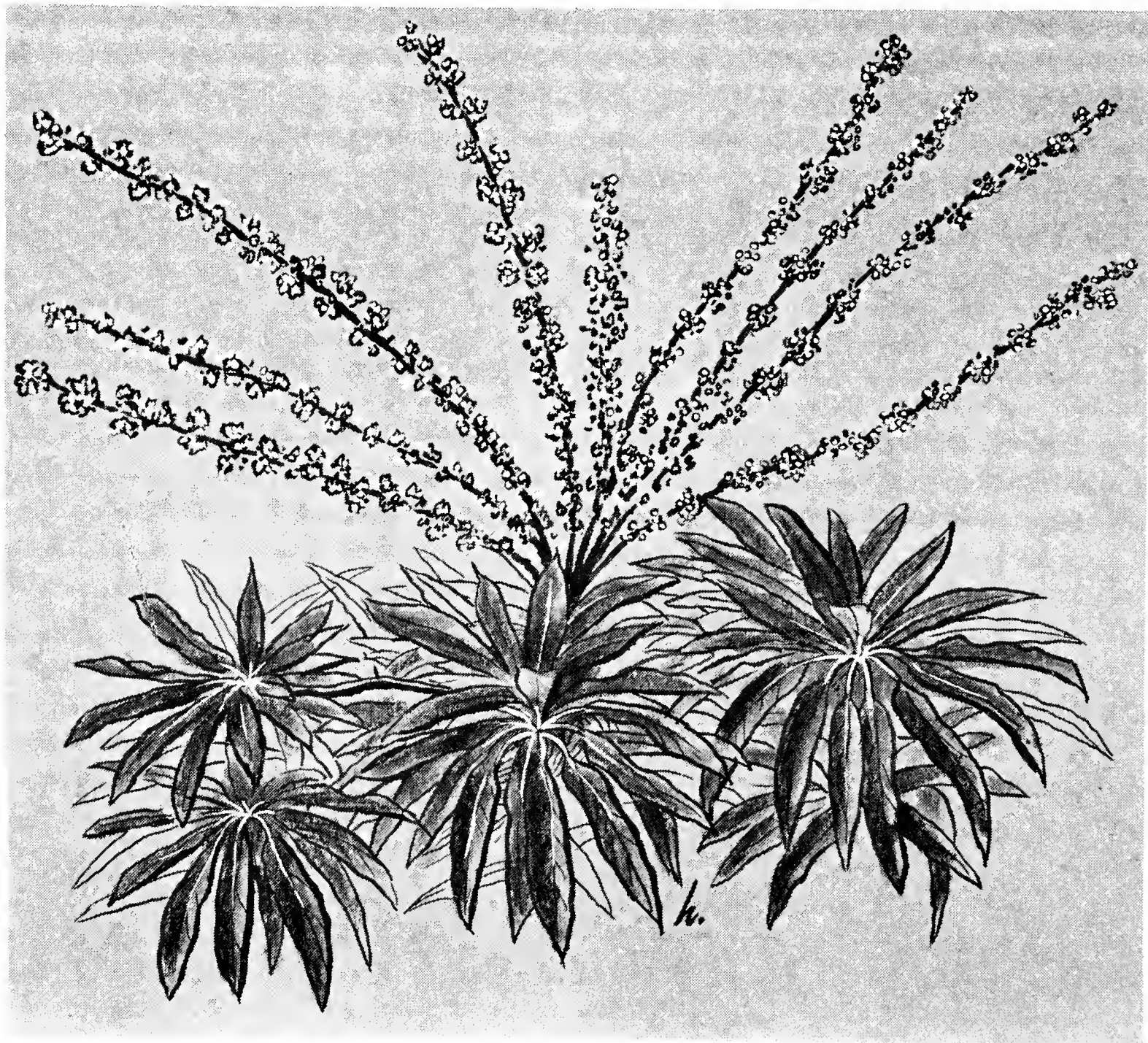
## *Brassaia actinophylla*

in the

Boettcher Memorial Conservatory

*Peg Hayward*

*Brassaia* is a genus of two or three species of trees in the Aralia family. *B. actinophylla* Endl. syn. *Schefflera actinophylla* Harms, native of Queensland, Australia, is a fast-growing tropical evergreen tree. The slender though sometimes multiple-stemmed tree may reach 30 or 40 feet in height in just a few years. It has few if any lateral branches. The tree owes its common name, Queensland umbrella tree, not to the form of the tree but to its parasol-like rosettes of leaflets poised at the tips of the long leafstalks. The large, shiny leaves are composed of 7 to 16 long-stalked



obovate-oblong, thick, radiately arranged leaflets. The margins have pronounced teeth irregularly spaced, more so in mature stage leaves.

The Queensland umbrella tree attracts particular attention when it produces at the extreme top of the tree a dozen or more 2- or 3-foot long branchlike spikes, which are densely covered by small, dark red flower heads. The flowers are fleshy and indistinct in form. It is a spectacular sight to see this tree in bloom even though suggestive of spreading tentacles, which gives the tree another common name, octopus tree. This species requires full sun to flower. Gradually the red flowers become purplish black fruits with 12 laterally compressed 1-seeded nutlets. Instead of shedding the fruits individually, the tree drops the long fruiting spikes, which shatter as they hit the ground.

The umbrella tree often begins its life as an epiphyte or air plant. If one of the seeds is dropped by a bird into a crotch of a nearby tree and is provided with moisture and debris to nurture it, germination takes place and the tree begins to grow. As the young tree grows, its roots will drop down all around the trunk of the host tree until they reach the ground, encompassing and choking to death the tree that mothered it. This trait further suggests an octopus.

The wood of the Queensland umbrella tree, which is soft, close-grained and dark in color, is not durable and is of little or no use.

*Brassaia actinophylla* is a fascinating plant of great merit because it can be used in many ways. It can be grown as an ornamental in foundation plantings and patios in the warmer regions and indoors in cooler ones, especially in hotel lobbies and large rooms where the plant can grow to a considerable height. Young plants are popular house plants because of their handsome foliage. As a decorative pot plant it should be grown under glass in a mixture consisting of loam, leaf soil, and sharp sand. Propagate by seed, which should be soaked in water before sowing.

## References

- Degener, Otto. *Flora Hawaiiensis. The New Illustrated Flora of the Hawaiian Islands*. Books 1-4. 1946.
- Menninger, Edwin A. *Color in the Sky*. Stuart, Florida: Horticulture Books, Inc., 1975.
- Morton, Julia F., and Bruce B. Ledin. Ph.D. *400 Plants of South Florida*. Coral Gables, Florida: Text House Inc., 1952.

# PLANT PORTRAITS

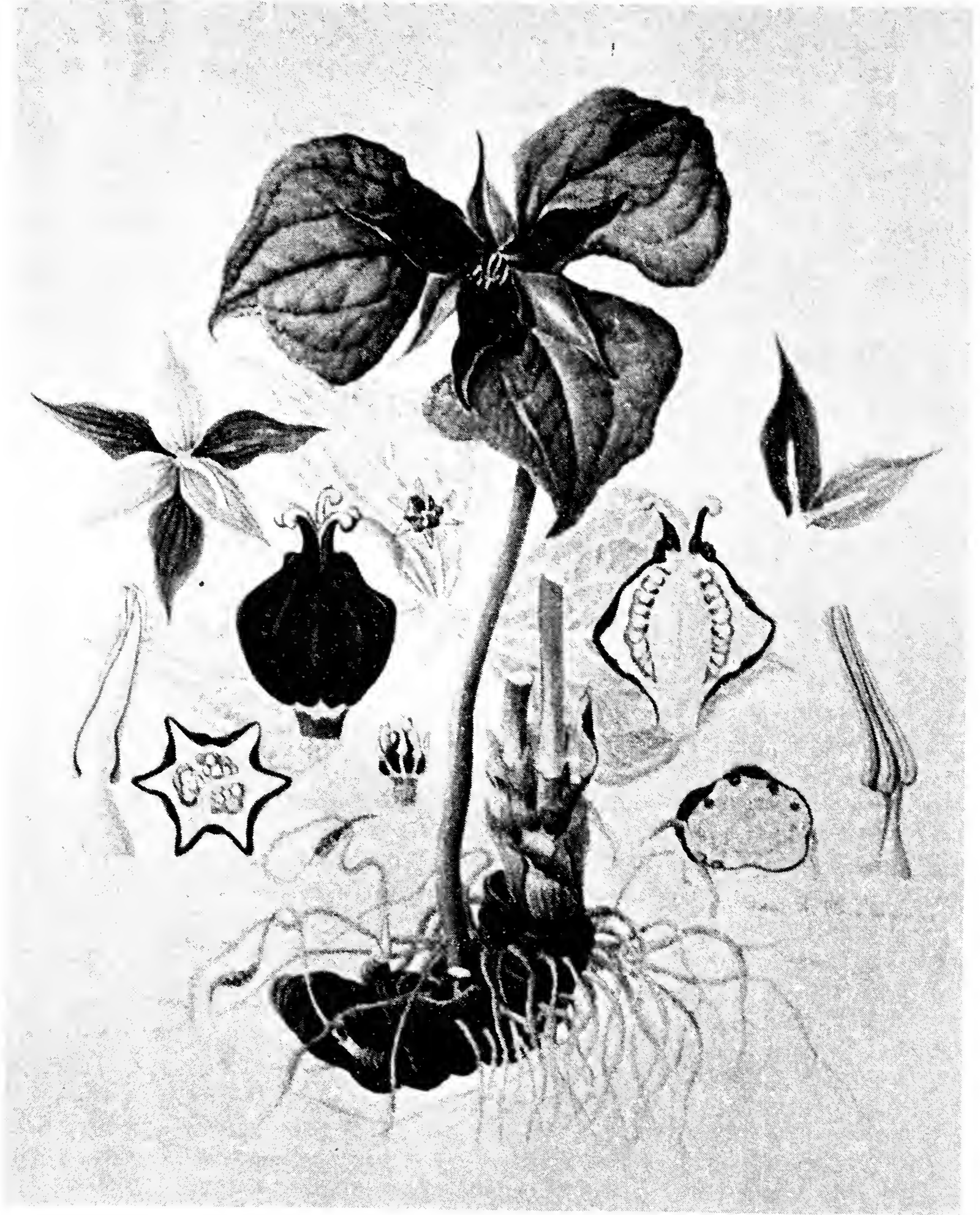


Photo courtesy of the DENVER POST,  
Bill Johnson, photographer



Almost 2,000 visitors viewed a collection of 50 water color studies of medicinal plants shown in the herbarium display area at Denver Botanic Gardens during the period January 7-31.

These botanically accurate plant portraits were painted by Ida Hrubresky Pemberton, a Denver artist whose works have been ranked with John J. Audubon's bird studies as masterpieces of nature painting.

Mrs. Pemberton was born in Nebraska in 1890, studied at Doane College, Crete, Neb., and at the Art Institute of Chicago.

She developed an interest in gardening in 1935 and was an active member of Home Garden Club of Denver for many years. The drawings of seeds reproduced here are but few of many illustrations in the Garden Club's 1947 year book.

For her studies of pharmaceutical plants she painted the various stages of growth as the plants developed from seeds, bulbs, and roots she had obtained from all over the world to grow in a home greenhouse. She often used a microscope to achieve accuracy in detail, yet the studies are esthetic delights. Colors are realistic with shading only to give valid shape.

In a review of the exhibit, James Mills, art editor of *The Denver Post*, wrote:

*So appealing is Mrs. Pemberton's draftsmanship and use of color and shading, that the collection of paintings cries for high quality reproduction in book or portfolio form. Such a project would undoubtedly be very expensive, but the reproductions would very likely find an extensive market.*

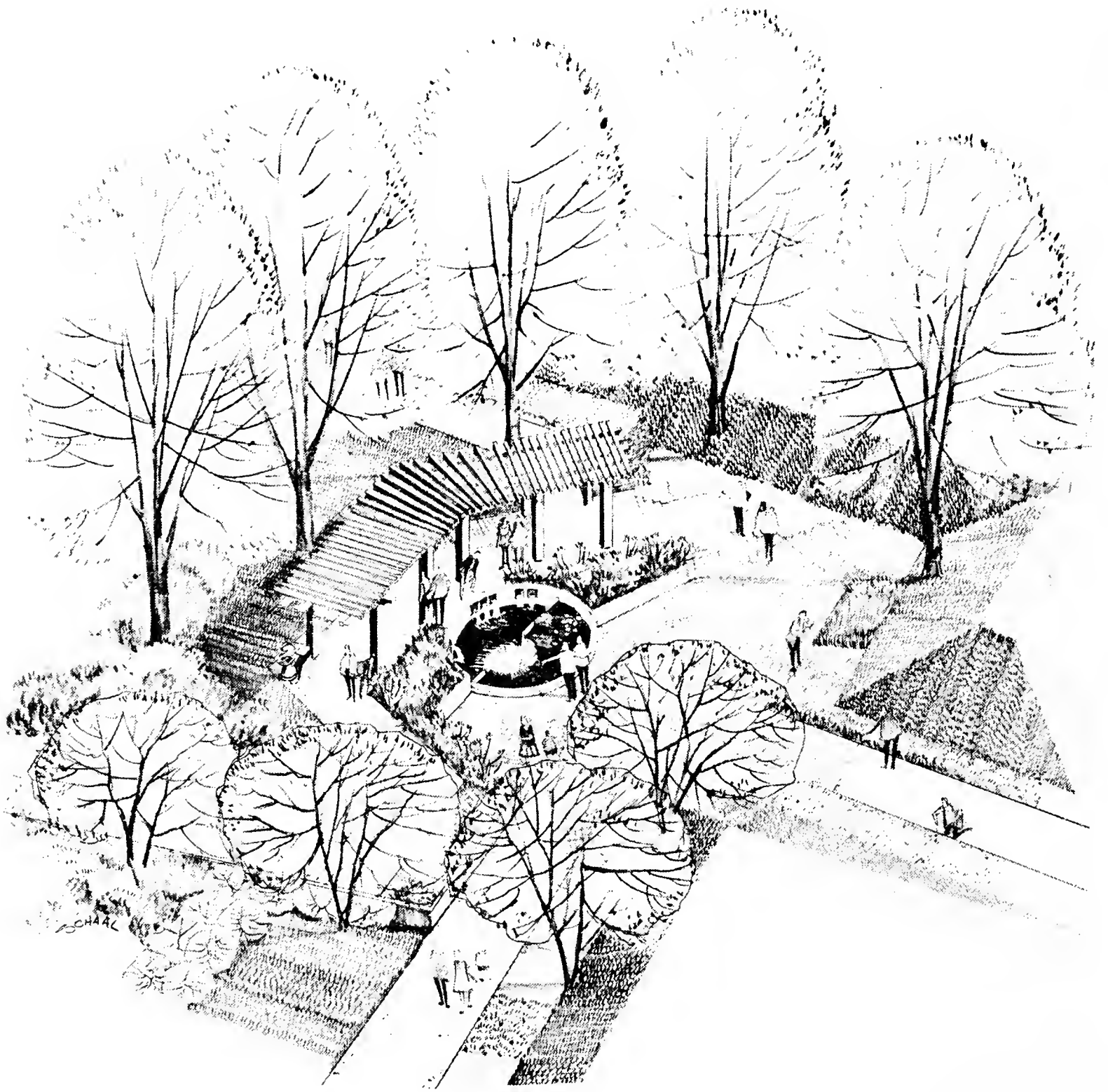
The University of Colorado's Museum obtained the collection after Mrs. Pemberton's death in 1951. Recently the paintings were on display at the National Museum of Natural History, Smithsonian Institution, Washington, D.C. Following the exhibition at Botanic Gardens the plant portraits were scheduled for show at the Museum of Art, Carnegie Institute in Pittsburgh.

Outstanding among the collection is red squill; *Urginea scilla* Steinh., a plant sometimes used for rat poison. The painting shows a huge, burgundy red bulb with beautiful green leaves, a red stemmed spike of white flowers making this an attractive plant. Pumpkin, *Cucurbita pepo* L., shows a pumpkin half with seeds, blossoms, hairy leaves and carefully delineated ovary, seeds and stamens.

Wake robin, *Trillium erectum* L., an aristocrat among Eastern spring wildflowers, is a typical member of the lily family, all of the floral parts being in threes or multiples of three.

Among the other interesting plant portraits were: skunk cabbage, *Symplocarpus foetidus* Nutt.; American ginseng, *Panax quinquefolium* L.; hemp, marijuana or hashish, *Cannabis sativa* L.; castor bean, *Ricinus communis* L.; autumn crocus, *Colchicum autumnale* L.; henbane, *Hyoscyamus niger* L.; and poison hemlock, *Conium maculatum* L.—B. E. P.

# HILDRETH GARDEN –



# room' with a view

The summer of '75 saw the construction of the major elements in the southwest portion of the Botanic Gardens. This comprised the area that will be planted to peonies, gladioli, lilacs, dwarf conifers (evergreen), and the newly designated Hildreth pool and garden.

This garden area was named in honor of Dr. A. C. Hildreth, former director of the Botanic Gardens from 1959 to 1965. The garden itself is composed of several elements. The outer edges are defined by several mounds or berms creating a room effect. This "room" has an opening between the mounds looking to the west, and the mountains can be seen in the distance—a room with a view. The circular pool in the center is the primary attraction and is unique in many ways.

In the center of the pool is a circular well several feet deep into which a sheeting cascade of water falls. There are two semicircular pools surrounding this well, the pool to the west being the largest. Water is recirculated into this pool and then is allowed to cascade into the well, as well as into the pool to the east. The east pool has water recirculated into a trough above it, and the water is then run back into the pool through three slots in the pool wall. The water then cascades into the center well. The overall visual effect is very pleasing as is the audio effect created by the cascading waterfall.

Red sandstone patio stones are used in a radiating pattern away from the pool to the west to create a patio area. The soil areas adjacent to this patio will be planted with flowers continuing this same pattern.

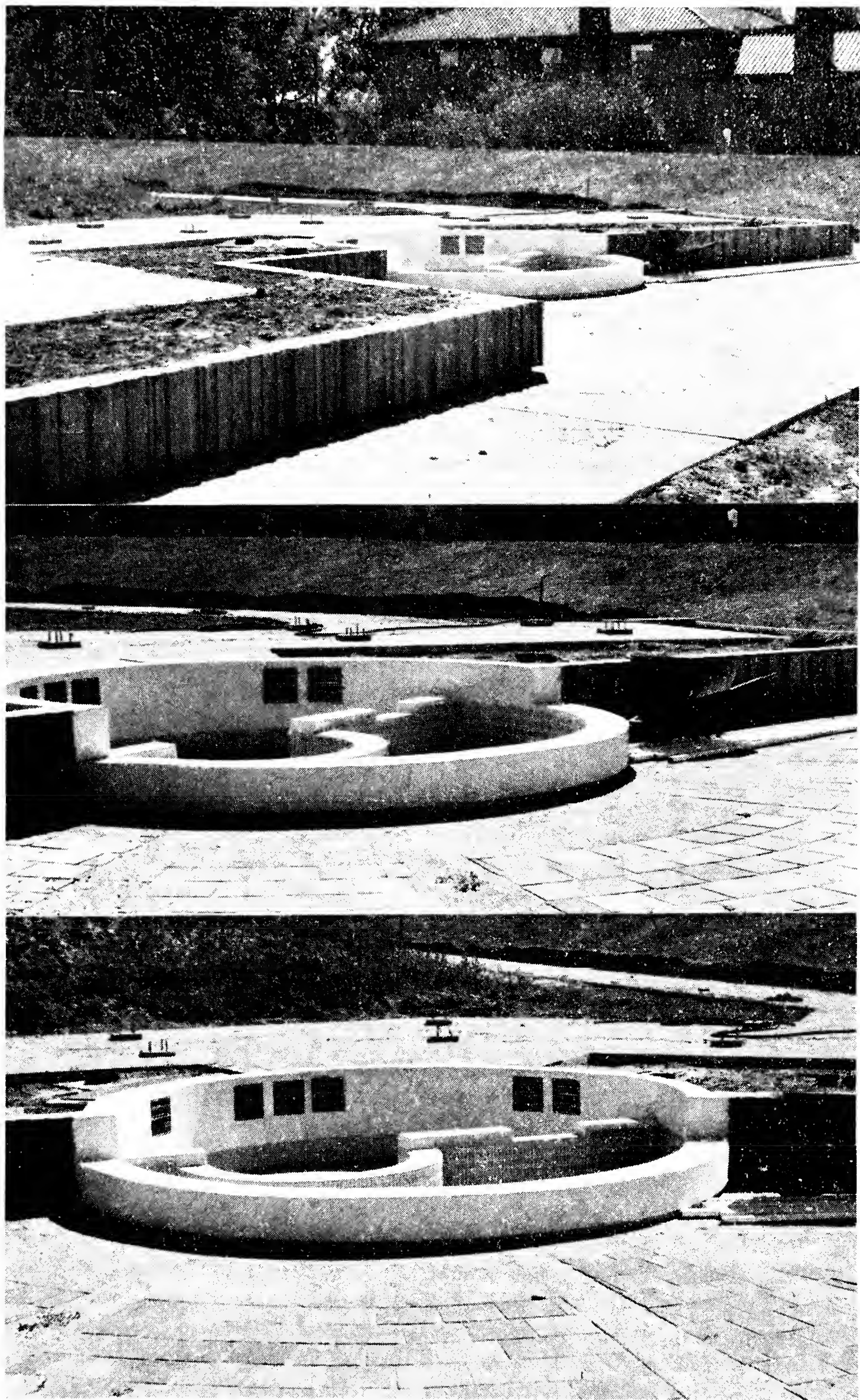
To the east of the very unusual pool is a raised walkway, which will have an arbor constructed over it in 1976. A drinking fountain is near this arbor so that a quiet, thirstless experience may be had.

Trees will be planted near this pool area, in 1976, to create some shade and soften the starkness of a new landscape. Flowers will also be planted this summer.

We hope that everyone will have the opportunity to visit this most interesting and delightful garden—with a view. —*Glenn Park*







The designer of the Hildreth Garden, Herbert R. Schaal, Principal of EDAW, Inc., elaborates further on the plan of the Garden.

## *The Fountain*

The fountain design responds to four separate directions of approach and an upper and lower level of observation.

As the viewer approaches the fountain from each direction, a separate and deliberate sequence of revealment occurs. For example, when the fountain is approached from the north, or the lower left in the drawing, the viewer's first awareness of the fountain will be the sound of falling water. As he moves closer, his anticipation is rewarded by a glimpse of water spouting from the two tiled panels on the far side of the fountain wall. The planter wall to the left, and the lower pool wall, conceal the other water elements. As the viewer arrives at the edge of the plaza containing the fountain, the sound intensifies and he perceives two levels of water, the falls from the upper level, and the three additional tile panels with water spouts. Drawn closer by these developments, he now observes for the first time the main water element, the circular falls, but even here, the display develops further into an upper and lower part. The bottom of these falls is concealed from view by the edge of the upper pool, leaving something still to be discovered by moving to the upper observation area. Humorously, the two tiled wall spouts hidden on the near wall are revealed last.

Each approach has its own unique sequence to be discovered, but in each,

the entire effect is revealed progressively as one approaches, and at each level of view, an entirely different effect is experienced. It is the sequencing and variety that makes the fountain unique and of lasting interest.

## *The Surrounding Landscape*

The landscape around the fountain is intended to produce a definite spatial or room-like effect. The earth berms are major components in defining the room, and the tree plantings further articulate the space. The taller ash trees at the upper level are intended to give the room a vertical dimension and also reinforce the westward orientation, which leads to enframed views of the Alpine and Rock Garden area backgrounded by the Rocky Mountains. The entire space could be characterized as a room with a picture window.

The arbor also responds to the westward orientation, and by its detail, scale, and definite overhead plane, provides a more intimate and restful place within the larger space.

The pavement patterns composed of square paving stone and exposed aggregate converge on the center of the fountain, emphasizing it as a focal point.

The shadows cast in the garden throughout the major portion of the summer days will tend to surround the garden, leaving highlighted in full sun the fountain focal point.

The planting areas adjacent to the paving and walks are backgrounded and contained by the strong land forms throughout.

# European Poison Hemlock

(*CONIUM MACULATUM*)

*Richard S. Mitchell and James R. Jackson*



*By the witches tower  
Where Hellabore and hemlock seem to weave  
Round its dark vaults a melancholy bower  
for spirits of the dead at night's enchanted hour*

Quoted in Folkard (1884)

Poison hemlock, one of Colorado's more notorious wild flowers, is unique in two ways. First, as its name indicates, it is extremely poisonous and, secondly, it is

imbued in tradition. It has been used by herbalists and in witchcraft for thousands of years; it is also the plant used to carry out the death of Socrates.

## Description

Poison hemlock, or *Conium maculatum* L., is in the *Umbelliferae* (carrot) family which contains many common garden plants such as carrot, dill, and parsnip. *C. maculatum* is an erect, smooth stemmed, biennial plant with a stout, whitish taproot. The stems, which may be from 50 to 300 centimeters tall, are spotted and branching. The leaves are compound and are usually 15 to 30 centimeters long. The flowers are small and white. The fruits are seed-like and small, usually about 2 to 2½ millimeters (Harrington, 1954).

There are many synonyms for this plant, perhaps owing to its rather wide distribution and recognition. Grieve (1970) lists the following names: herb bennet, spotted corobane, musquash root, beaver poison, poison parsley, spotted hemlock, kex, and kecksies. Harrington (1967) adds European poison hemlock.

The generic name *Conium* refers to dizziness or death and the specific name *maculatum* is in reference to the dark purple spots on the stem (Kreitmair, 1948). The English name "hemlock" comes from the Anglo-Saxon words "hem," meaning border or shore and the word "leac" meaning leek or plant (Grieve, 1970). This may point to the fact that hemlock is often found along rivers. The old Roman name was *Cicuta*, and it was this name that was applied in 1541 by Gesner to *Cicuta virosa* L., the water hemlock. In 1737 Linneaus restored the classical Greek name (Grieve, 1970). The German common name for hemlock is "Fleckschierling." "Fleck" means spot, and again refers to the spotted stem. "Schierling" means manure, and, according to Kreitmair (1948) comes from a distinguishing feature of the plant: the smell of the flowers which is reminiscent of mouse urine.



## "A Satanic Herb"

Although hemlock is mentioned as early as the tenth century (Grieve, 1970), the plant owes much of its fame to the Greeks, who used its poison as a means of execution and suicide. Folkard (1884) noted Dioscorides' description of it as a "very evil, dangerous, hurtful and poisonous herb." The poisonous juice was called "Coneion" by the Greeks and was drunk by Socrates, Theramenes, and Phocion (Kreitmair, 1948; Folkard, 1884).

Many other countries are familiar with hemlock and have used it for centuries for rituals and medicine. Eleusinian priests, who practiced celibacy, are reported to have rubbed themselves with the plant. In Russia, it is called "Beh," and is considered to be "a Satanic herb." In Germany, "Fleckschierling" is regarded as the funeral plant and represents "the infernal regions." In England, hemlock was favored by witches and "is still considered a plant of ill-omen, growing among ruins and in waste places, and being unsavoury and offensive to the senses" (Folkard, 1884). According to an old English legend, the purple streaks on the stem represent the brand put on Cain's brow after he had committed murder (Grieve, 1970). One of St. Benedict's herbs is the hemlock, which he used as an antidote (Folkard, 1884). Grieve (1970) describes its action as antagonistic to strychnine.

## A Pain Reliever and Herbal Cure

Strange as it seems that a poisonous plant should be used in medicine, in early times many prescriptions called for preparations made from hemlock. Kreitmair (1948) reports that early physicians often prescribed the juice of hemlock for women as a medicine for the uterus and as a lactation inhibitor during the weaning of children. Other ailments calling for



hemlock were asthma, whooping cough, neuralgia, general cancer, cancer of the breast, and scrofula. It was also used as an external pain reliever and to reduce swellings in muscles and joints (Kreitmair, 1948). Grieve (1970) describes the major ingredient in hemlock juice, coniine, as a sedative and antispasmodic which may act as a paralyzer to the centers of motion. It has also been used as a cure for tetanus and, in medieval times, it was mixed with betony and fennel seed as a cure for hydrophobia. Often it was prescribed as a remedy in cases of undue nervous motor excitability such as teething in children, epilepsy from dentition, cramp, paralysis, agitation, spasms of the larynx and gullet, acute mania, and bronchitis (Grieve, 1970).

### **Immune Fowl Become Poisonous**

Most authors note that coniine, used as a medicine, was always given with extreme care. "It is, indeed, one of our most poisonous plants," (Kreitmair, 1948). Many animals, both domestic and wild, have been poisoned by eating hemlock. Sperry et al. (1914) report that all parts of the plant, including the seed, are poisonous to livestock. Harrington (1967) claims some parts of the plant are worse than others. It may be that very little of the coniine is concentrated in the root (Grieve, 1970). Hemlock may be more poisonous at certain times during the year (Harrington, 1967). Sperry et al. (1914) claim the greatest danger is in the spring. Harrington (1967) notes that livestock is sometimes killed by eating the fresh plant, but Sperry et al. (1914) report that it has a low palatability and is not eaten to any extent if good forage is available. Grieve (1970) reports that many domestic animals are killed by eating it, but that goats as well as thrushes, larks, and quail may be immune. The skin of the latter two may become impregnated with coniine and is poisonous to eat. Sergeant

(1948) notes that quail in Algeria that have fed on hemlock are known to be poisonous when consumed by man; two other cases are reported to have occurred in France.

Humans have also been poisoned by eating the plant directly by mistake. People have mistaken the leaves for those of parsley, the roots for parsnips, and the seeds for anise seeds (Grieve, 1970). Grieve (1970) also reports that children have suffered from making whistles from the hollow stems but Harrington (1967) believes this to be of little danger.

### **Symptoms of Death**

Probably the first description of physiological effects of hemlock poisoning in humans comes from the records of Socrates' death after drinking the poison. The executioner knew the symptoms and made a record of them until Socrates' death. Although his feet and legs became numb, he remained conscious and spoke with his friends until death (Kreitmair, 1948). The body temperature also drops, and it was once thought that this was the principal cause of death. Folkard (1884) quotes Pliny as saying "...serpents fly from its leaves because they also chill to the death." Often the legs feel cool and irritation is noticed on the arms. After unconsciousness, breathing stops. The most important first aid is artificial respiration, which often means the difference between life and death (Kreitmair, 1948).

In laboratory mice, coniine causes general paralysis, cramps and respiratory failure (Kreitmair, 1948). DeBoer (1950) tested frogs and cats with coniine and found it to cause neuromuscular block along with spinal stimulation. Further studies with mice, rats, and frogs showed the rodents to be more sensitive than the frogs. In each case death was found to be the result of respiratory paralysis.

Kreitmair (1948) reports that coniine has an effect on motor nerve endings similar to the South American arrow



poison, curare. Ten to twenty milligrams injected into a frog causes complete paralysis and both heart and breathing stop. Cellular studies reveal that red blood cells rupture and the nuclei change. Sperry et al. (1914) noted that coniine acted as a heart depressant in livestock.

### Pliers Remove Poisonous Juice

By 1886, Ladenbur had synthesized coniine, and by then it was known to be the toxic substance in *Conium maculatum* and the source of the plant's mouse-like odor (Kreitmair, 1948). Coniine was found to be a colorless, bitter-tasting substance which turned brown when exposed to the air. Nicotine is a similar substance but 16 times less toxic (Kreitmair, 1948).

Several methods exist for extracting and measuring the poison from the plants. One field method described by Kraft (1953) utilizes special pressure pliers to remove the juice from growing plants. Cromwell (1956), using crushed tissues, which were subjected to steam distillation and paper chromatography, found that the principal alkaloids were in the leaves, flowers, and growing tissues but few alkaloids were found in the roots. The coniine content of dry hemlock powder can be determined by acid-base titration (Schiedt and Hoss, 1963). Coniine is one of a large diverse group of compounds called alkaloids. Other alkaloids include atropine, morphine, nicotine, caffeine, and muscarin (one of the mushroom poisons).

### Control and Distribution

The plant is susceptible to 2,4-D and Sperry et al. (1914) note that spraying in local areas has been effective. Some authorities (Harrington, 1967; Grieve, 1970) recommend eradication of hemlock to avoid accidental poisoning of humans and animals.

*Conium maculatum* is a fairly common plant in many countries of the world including European countries, Eurasia, North and South America, and others. Harrington (1967) states that it was introduced to North America from other continents and is now widely distributed. Hemlock may have been introduced to the United States from Eurasia (Sperry et al., 1914). In the Rocky Mountain area, *C. maculatum* is usually found below 9,000 feet, often in waste places, in ditches and valley bottoms, and usually in moist ground (Harrington, 1967). In Colorado, hemlock is common along the South Platte river from Greeley to Ft. Morgan.

### Literature Cited

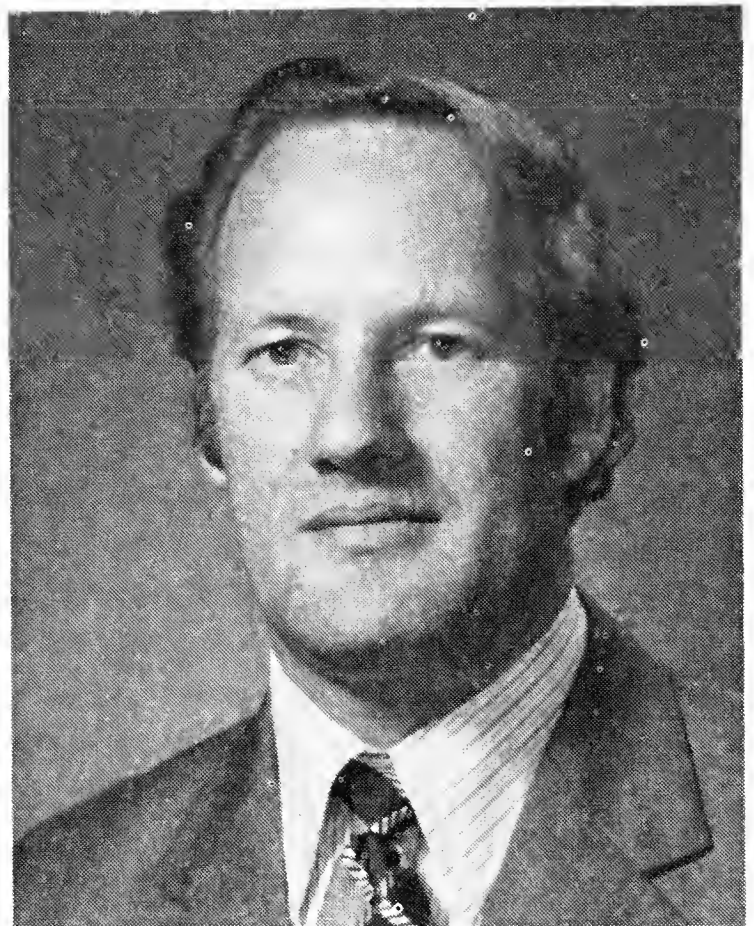
- Cromwell, B. T. 1956. The separation, micro-estimation, and distribution of the alkaloids of hemlock. *Biochem. Jour.* (2):259-266. (Abstr.).
- DeBoer, J. 1950. The death of Socrates: a historical and experimental study on the actions of coniine and *Conium maculatum*. *Arch. Internatl. Pharmacodyn. et. Ther.* 83:473-490.
- Folkard, R., Jr. 1884. Plant lore, legends, and lyrics. Folkard and Son, London. p. 53, 93, 95, 369.
- Grieve, M. 1970. A modern herbal. Hafner Co., Darien, Conn. p. 391-4.
- Harrington, H. D. 1954. Manual of the plants of Colorado. Sage Books, Denver, Colo. p. 407.
- Harrington, H. D. 1967. Edible native plants of the Rocky Mountains. Univ. of New Mexico Press. p. 26-28.
- Kraft, D. 1953. Die teupfelmethode in der pflanzenzuchtung. Über eine einfache feldmethode zur alkaloidbestimmung. *Pharmazie.* 8;170-173.
- Kreitmair, H. 1948. *Conium maculatum*—der fleckschierling. *Pharmazie.* 3:565-566.
- Schiedt, U. and H. Hoss. 1963. Zur biogenese der alkaloide III. Lysin als vorstufe des coniine. *Hoppe-Seyler's Zeit. Physiol. Chem.* 330:74-83.
- Sergent, E. 1948. Les cailles empoisonneuses en France, deuxieme note. *Biol. Abstr.*
- Sperry, O. E., J. Dollahite, G. Hoffman, and B. Camp. 1914. Texas plants poisonous to livestock. *Bull. Texas Agric. Ext. Ser.* B-1028. p. 19.

# Meet Our New Conservatory Superintendent

Denver Botanic Gardens members will be pleased to know we have a new Superintendent of the Boettcher Memorial Conservatory. He is Andrew Pierce. A British Subject, he comes to us with 12 years of experience in subtropical horticulture in Bermuda, where he has been Horticultural Officer for the Department of Agriculture and Fisheries.

Mr. Pierce has an impressive background in formal education, practical training, and professional work. His formal education includes a Certificate of Attainment in Geography and General Science at the age of 17 from Simon Langton Boys' School in Canterbury, followed by studies with the Royal Horticultural Society and at the Kent Horticultural Society, which earned him four certificates. He worked for several years with the Canterbury Parks Department, then studied for 2 years at the Royal Botanic Gardens, Kew. There he earned Diplomas at three levels in Horticulture. He worked for a time in Liverpool as general foreman for their Parks Department; then wishing to gain more experience in other climates, he moved to Bermuda. He has had nursery experience and has done both indoor plant decoration and landscaping.

While studying at Kew, he received special honors: the Hooker Prize for "the



most work done by a member" for the Mutual Society and the Grower's Prize (first offered) as the "most practical gardener."

The Pierce family includes his wife, Georgina, and two sons, Gordon and Michael. Mrs. Pierce is an accomplished pianist.

Denver Botanic Gardens members and supporters welcome the Pierces and wish them happiness during their tenure with us. *Moras L. Shubert*

# LOOKS AT BOOKS

**The Complete Handbook of Pruning** Edited by Roger Grounds. MacMillan Publishing Co., Inc., New York. 1975. \$12.95.

*The Complete Handbook of Pruning* tells how, why, and when to prune. Eighty-five photos, more than half in color, and 108 drawings show several pruning sequences and give specific information on where to cut particular species.

Since pruning strategies vary from species to species, the book includes an illustrated alphabetical guide for 250 popular trees, shrubs, and vines. Special chapters cover hedges (with a summary chart), various fruits, roses, and indoor plants. Such advanced techniques as notching, root pruning, and topiary (decorative shaping) are explained, and the use and care of tools is fully discussed.—Macmillan *Preview*

This book will give the gardener a lot of information about pruning and training of woody plants, especially if he is living in England. Most of the techniques are correct and the chapters on training by pruning (even though some of the terms used are not known in the United States) and pruning of fruit trees and bushes are very good. Many plants are used as examples, except that a number of these either would not grow in Colorado or would not perform well in the locations suggested. This book would be valuable for the experienced gardener who could ascertain the salient points and not be misled by recommendations for another climatic area.

There are chapters on pruning roses, hedges, old trees, climbing plants, greenhouse plants, and topiary. Also covered are tools and equipment (some not available in the United States) and pests and disease control by pruning.

The authors still recommend a tree wound dressing, but research work on this subject in the United States has shown no benefit and some possible problems in using a tree wound dressing. In this writer's opinion, there are other books on this subject, for a lot less money, that are written for conditions in the United States and would be the better buy. Let your local library buy it and save your money.

Finally, one chapter is devoted to a list of plants and how to prune them. Again, many plants are not hardy here or are greenhouse subjects only. The information on pruning of these plants is very brief and leaves a lot to be desired towards explaining how to prune them.

A number of the illustrations do not show proper use of pruning techniques and equipment and could lead to bad pruning of your plants.—*Glenn Park*

**Grow Native : Landscaping with Native and Apt Plants of the Rocky Mountains**, by Sam Huddleston and Michael Hussey. Apple Tree Image Publishers, Inc. Fort Collins, Colo. 1975. 132 pp.

*Grow Native* is an informative handbook on landscaping with native plants. It is especially helpful to the planner, whether home owner or land developer, whose chief interest is creating an esthetically pleasing landscape in our high plains, semidesert environment with its limited availability of water.

By carefully choosing plants suggested by the authors for a variety of locations or micro-climates, planners can develop a landscape typical of nowhere but here, where rainfall is meager, fluctuations of temperature are extreme, hot dry winds are prevalent and the sun's ultra-violet rays are seldom veiled. To paraphrase an expression used by the authors in their introduction, "only the natives can take it well."

Some features of the book that are particularly helpful deserve special attention. The authors have set up a series of three "watering schedules" which should be of

considerable assistance to everyone. They are simple, easy to understand, and the reader is told which schedule is appropriate for each of the fifty-two species or genera which are included in the book. Specific suggestions on the techniques of watering, if followed, would result in healthier plants and economy of precious water.

The basic facts about each plant are organized into categories which include salient descriptive points, suggested uses by the landscaper, watering schedule, exposure to sun, and suitable substitute plants in the event the gardener already has utilized the plant in question and would like to try another species or variety which would grow well under the same conditions. The book is well organized, not wordy, and the desired information is readily recoverable.

The illustrations are very satisfactory. Each species or genus is pictured in well-executed black and white photographs. A number of pages are devoted to illustrations in color. A very useful feature is the representation of the relative size of each plant by using a silhouette of the mature plant and of a man, side by side. Several pages are devoted to the basic principles of landscape design with some representative examples illustrated in color.

A final section of the book is devoted to very specific suggestions on the planting of bareroot trees and shrubs, those which are container-grown and/or marketed, and those which are balled and burlapped. Well-executed pen and ink sketches illustrate the directions given for planting.

Denver Botanic Gardens members and friends will be interested in the fact that "our own" Mrs. J. V. ("Pete") Petersen is acknowledged as an avid gardener with "natives" and that some of the photographs used in the book are from her garden.

A feature which is lacking and which would have added much to the value of the book is a list of useful reference works which are available on various aspects of the subject matter covered by the authors, for the Rocky Mountain area. A complete citation of the only reference, which is mentioned as the authority for spelling and nomenclature is not even included. Application of the term "Foreign" to the ten species (out of a total of 52) which are included in the book and which are *not native* to the region will be objected to by botanists and could be misleading to the amateur. The acceptable term in this circumstance is "Introduced."

Both authors are extremely well qualified from the standpoint of their experience to produce this type of book.

The senior author, Sam Huddleston, is a noted professional plains and landscape architect, whose headquarters are in Denver but who practices throughout the West and as far away as Alaska. He states that "man has no alternative but to work harder to adjust his life style to the environment, rather than vice versa; and the use of appropriate plants is an important key to man's efficient land use and utilization of resources. Landscaping with native plants, including buffalo grass, helps mitigate one of our more serious transgressions on the environment—our excessive use of water, about half of which goes to maintain 'foreign' plants and lawns."

Michael Hussey, the junior author has practiced residential, subdivision and park landscape design for the last eight years. His home base is in Evergreen, Colorado, where he first became interested in using native plant material in landscape design.

This small volume is a very welcome addition to the literature of horticulture of the Rocky Mountain area, and should prove to be quite useful.—*William G. Gambill, Jr.*

# DENVER BOTANIC GARDENS, INC.

A Non-Profit Organization

## OFFICERS

Mr. John C. Mitchell	President
Mr. Harley G. Higbie, Jr.	Vice-President
Mr. Richard A. Kirk	Vice-President
Mrs. James J. Waring	Vice-President
Dr. Moras L. Shubert	Secretary
Mrs. Frank B. Freyer, II	Assistant Secretary
Mr. Alexander L. Kirkpatrick	Treasurer

## STAFF

Dr. William G. Gambill, Jr.	Director
Mr. Glenn Park	Assistant Director
Mr. Andrew Pierce	Conservatory Superintendent
Ms. Beverly M. Nilsen	Botanist-Horticulturist
Mr. Dudley H. Schwade	Botanist-Horticulturist
Miss Margaret Sikes	Education Director
Mrs. Solange Huggins	Librarian
Miss Lucy Crissey	Honorary Librarian
Dr. D. H. Mitchel	Honorary Curator of Mycology
Mrs. J. V. Petersen	Honorary Editor of <i>The Green Thumb</i>
Dr. Helen Zeiner	Honorary Curator of the Kathryn Kalmbach Herbarium

## ILLUSTRATION SOURCES

Cover and Page 16: Photos by Patricia G. Smith  
Pages 2, 3, 4, 5, and 11: Drawings by Pauline Roberts Steele  
Pages 8 and 10: Drawings by Suzanne Ash  
Page 18: Drawing by Phil Hayward  
Page 20: Photo courtesy of the *Denver Post*,  
photographer Bill Johnson  
Page 22: Architect's drawing, EDAW, Inc.  
Pages 23 and 24: Photos by James Carlson  
Page 26: Drawing by James Jackson



# *The Green Thumb*

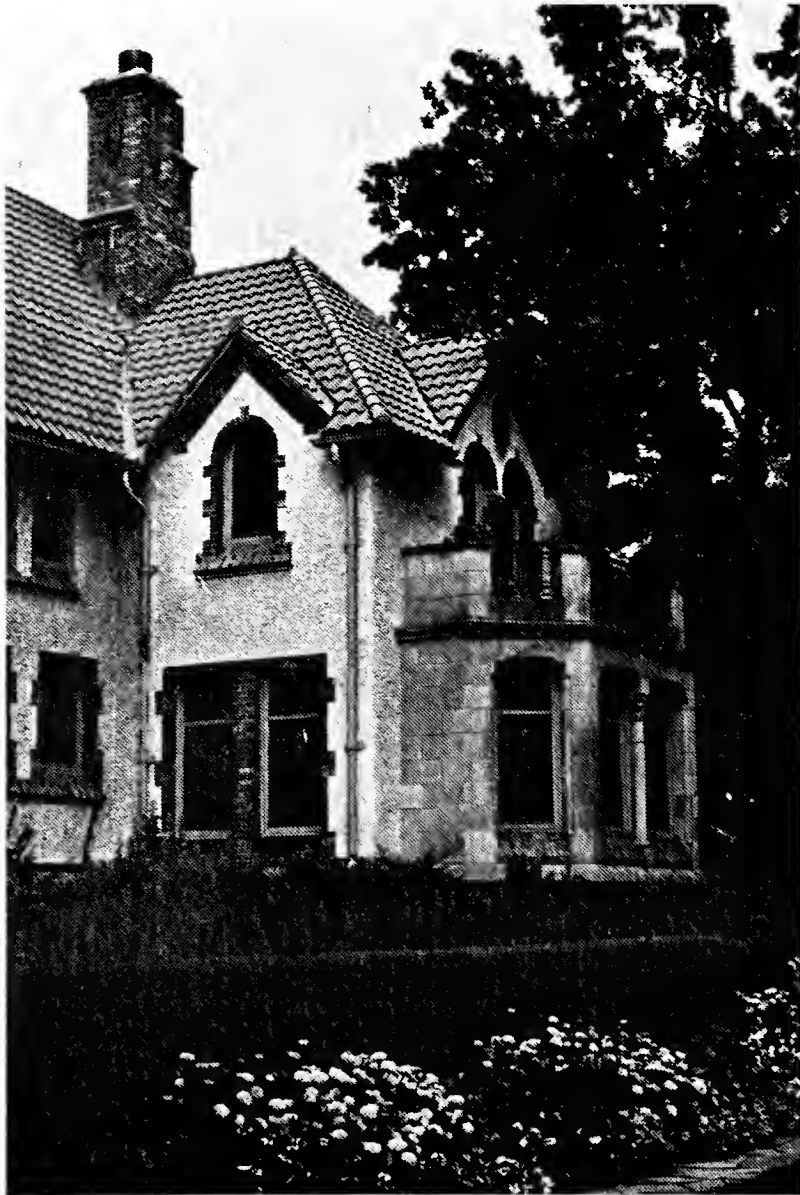
DENVER BOTANIC GARDENS  
909 YORK STREET  
DENVER, COLORADO 80206

NON-PROFIT  
ORG.

U. S. POSTAGE  
PAID  
Permit No. 205  
Denver, Colorado

**DO NOT FOLD**

ADDRESS CORRECTION  
REQUESTED RETURN  
POSTAGE GUARANTEED



Botanic Gardens House

DENVER BOTANIC GARDENS  
DENVER, COLORADO

*This is a non-profit organization supported by municipal funds and private donations.*

Denver Botanic Gardens maintains a collection of living plants, both native and exotic, for the purpose of acquiring, advancing and spreading botanical and horticultural knowledge.

# *The Green Thumb*

VOL. 33, NO. 2

SUMMER, 1976



## THE COVER

*Pediocactus simpsonii*

Mountain Ball Cactus

## THE GREEN THUMB

SUMMER, 1976

### VOL. THIRTY-THREE, NUMBER TWO

#### *Editorial Committee*

Mrs. Gilberta T. Anderson

Dr. William H. Anderson, Jr.

Mrs. D. A. Andrews-Jones

Mrs. Suzanne Ash

Mrs. Paul A. Bloustein

Mrs. William H. Crisp

Dr. William G. Gambill, Jr.

Mrs. George H. Garrey

Mrs. Phil Hayward

Ms. Solange Gignac

Mrs. Robert M. Kosanke

Mrs. J. V. Petersen, *Chairman*

Dr. Moras L. Shubert

Miss Margaret Sikes

Pauline Roberts Steele

Dr. Janet L. Wingate

Dr. Helen Marsh Zeiner

Published by **Denver Botanic Gardens, 909 York Street, Denver, Colorado 80206.**

Sent free to all members of the organization. Junior membership \$3.00, Regular \$10.00, Participating \$30.00, Contributing \$50.00, Supporting \$100.00, Corporation \$200.00, Patron \$500.00, Life (single contribution) \$1,000.

By becoming a member of Denver Botanic Gardens you will receive *The Green Thumb* and the monthly *NEWSLETTER*. You will also have unlimited access to the use of the books in the Helen K. Fowler Library, located in Boettcher Memorial Center at 1005 York Street.

For further information write to Membership Chairman, Botanic Gardens House, 909 York Street, Denver, Colorado 80206, or call 297-2547.

Copyright 1976 by Denver Botanic Gardens, Inc.

# *The Green Thumb*

Copyright 1976

William H. Anderson, Jr. Ed.D.  
Gilberta T. Anderson  
Editors

Cemetery to Conservatory	
<i>Louisa Ward Arps</i> . . . . .	34
About Seeds and Seedsmen	
<i>Bernice E. Petersen</i> . . . . .	40
Bicentennial Garden Plants and Ideas	
<i>Glenn Park</i> . . . . .	45
Exotics of Colorado, Peach	
<i>Helen Marsh Zeiner</i> . . . . .	47
Ground Covers for Colorado	
<i>George W. Kelly</i> . . . . .	50
Focus On Sapodilla	
<i>Peg Hayward</i> . . . . .	56
Flowers for Container Gardening	
<i>Dale Boyle</i> . . . . .	57
Cacti as Houseplants	
<i>Jack Holland</i> . . . . .	58
The Herb Garden	
<i>Gloria Falkenberg</i> . . . . .	61
Alpine Anemone	
<i>Marjorie L. Shepherd</i> . . . . .	62
Looks at Books	
<i>Ruth A. Nelson</i> . . . . .	64





# Cemetery to Conservatory

## Part 1: The City Cemetery (present Cheesman Park)

**Louisa Ward Arps**

As a gesture toward celebrating Denver's centennial, The Green Thumb will publish a series of articles on the history of the land around the Denver Botanic Gardens. This acreage included Cheesman Park when it was the City Cemetery, the Gardens when it was the Roman Catholic Cemetery, the Children's Gardens when they were the Jewish Cemetery, Congress Park when it was the city nursery, the Pest House, and the Capitol Hill Reservoirs.

Today, Cheesman Park spreads its green lawn over eighty acres of land on the western slope of a hill east of Denver's inner-city. A little more than a century ago, the hill was only a rise on the prairie sparsely covered with sage brush and yucca and inhabited by prairie dogs.

On November 18, 1858, an Arapaho Indian standing on the spot now covered by a Greek-type pavilion in Cheesman Park may have looked down toward the Cherry Creek bottoms to see a few men walking beside an overloaded wagon pulled by two yoke of red-and-white oxen, heading toward a settlement called Auraria on the South Platte River. One of the walkers was an eighteen-year old youth named Will Larimer, still energetic after his walk from Kansas up the Santa Fe trail and then north toward the gold discoveries. Another walker was his weary father, a real estate man, who that evening, as tired as he was, waded across Cherry Creek to claim a town site he called Denver City. He ignored evidence that the site had been previously claimed for a town named St. Charles, thus starting a squabble among the three towns as to which would soon become known as "The Queen City of the Plains." Larimer and his Denver City won.

He laid out his streets northwest and southeast (for which Downtown Denver still dislikes him), then decided the "city" lacked one essential — a cemetery. In later years, Will Larimer wrote, "We knew it was a healthy country; nevertheless there was



likely to be a death now and then . . . So Father and I had slipped away by ourselves one day and staked one off on the hill along the road up Cherry Creek."<sup>1</sup>

Now you may stake out a cemetery but it is not official until you have buried a body there. The question was — whose? Some historians suggest that the first burial was of a quiet man who died a natural death, but most accounts prefer tales of blood and violence. They talk of John Stoefel, an Hungarian, who came west with his in-laws just to get even for some unstated offense. He murdered his brother-in-law, was arrested, legally tried by a People's Court, taken to a cottonwood tree (at 10th Street and Wazee), prayed with by Rev. George Fisher, and hanged by Noisy Tom Pollock. Cemetery-owner Larimer, the tale continues, loaded Stoefel's corpse and that of his victim in a wagon and drove two miles east of town where he dumped both bodies into the same hole, thus making the claim to his cemetery legal.

Just where Larimer set his stakes for his 320 acres of land is not known, but the reason he called the place Mt. Prospect is obvious. The great bow of the Front Range of the Rocky Mountains spreads out to the west, 150 miles from Cheyenne Mountain (near Colorado Springs) on the south to the Mummy Range (above Estes Park) on the north and beyond. Soon the less poetic Denver citizens called the cemetery the Boneyard, and, of course, Boot Hill, because, as Historian Smiley so elegantly expressed it, "a considerable number of the silent dwellers in the growing city of silence went there through gateways suddenly opened by violence which was death's active assistant in those years."<sup>2</sup>

On the last day of April, 1860, the graveyard acquired the name of Jack O'Neal's Ranch. Jack was a gambler by profession, a handsome young man of powerful physique, a flashy dresser, very Irish, very popular. In a billiard saloon he quarreled with a Mormon named Rooker, not an admirable character. To settle the dispute Jack

### Denver's Oldest Cemetery



suggested they lock themselves in a dark cabin with bowie knives. Naturally, Rooker refused. Whereupon Jack cast aspersions on him, his father, his mother, and his sister (who constituted the first white family in Denver). One sunny day Jack, who was building himself a house, strode down Ferry Street to buy some nails. Rooker, sheltered by the door of the Western Saloon, filled O'Neal full of buckshot. O'Neal's many friends escorted his body to the cemetery, where the white-haired clergyman Father Kehler read the burial service from the Book of Common Prayer, and later entered into the Funeral Records of St. John's Church in the Wilderness these words: "March 31st. Jack O'Neal. Shot by Rooker in W. Denver March 30th, 1860."

Larimer, conveniently forgetting he had jumped someone else's claim to a town site and appropriated Indian lands for a cemetery, complained when John J. Walley, an undertaker, "through some rascally technicality during our absence in the States," secured a certificate of pre-emption on the cemetery on April 22, 1865. Walley lived to be ninety-four years old, the oldest undertaker in the U.S.A. The year before he died — he died at 1457 Washington Street in January 1920 — he recalled how he had become interested in the burial business. Having come to Denver in 1859 from Albany, New York with his carpenter's tools, he happened to be present when one man shot another for refusing a friendly drink. Someone told Walley to "take the measure of the corpse." While he was so doing, the murderer was lynched, so Walley made two coffins and buried them both on Cemetery Hill.<sup>3</sup>

### Treasure Still Lost

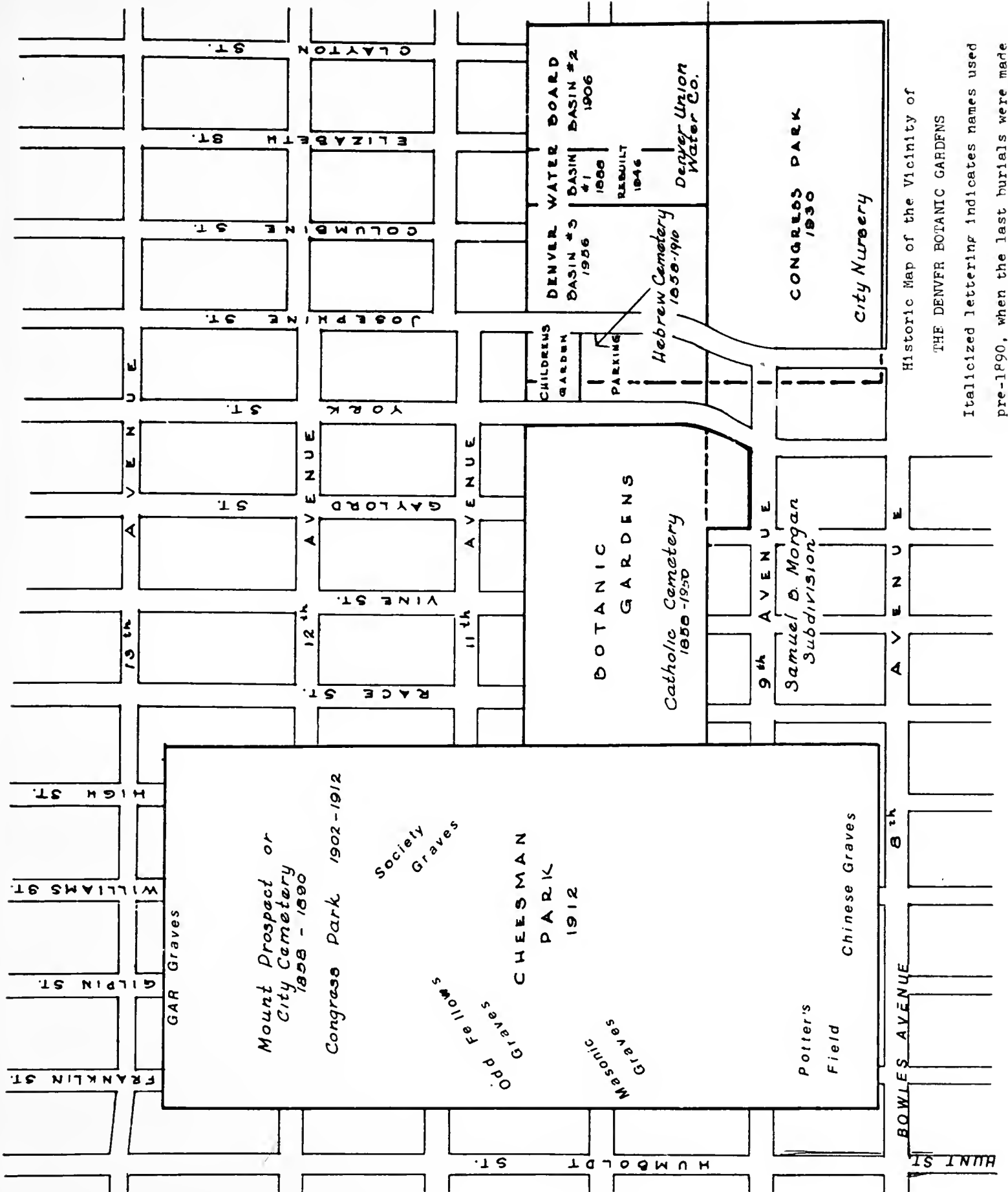
No account of early Colorado is complete without reference to (1) prostitutes, (2) lost treasure, and (3) the Sand Creek Massacre, with all of which the Denver cemetery can claim connection. (1) Any time the girls from Holladay Street followed one of their frail sisters to her grave in the City Cemetery, the local newspaper made a sadistic note of the funeral, often saying the "lady" had died from an overdose of laudanum.

(2) The tale of lost treasure is dated February 1864, when a genteel youth absconded with a bunch of "shin plasters" and a gold ingot from the Denver mint. Riding a horse identified as being blind in one eye, the youth headed southeast. He found the ingot awkward to carry so threw it away near the City Cemetery. A search for the ingot today will prove futile because the day after the robbery two boys happened to find it. They smoothed off the mint marks, cut it in half, and were apprehended when one of them tried to sell his half to Kountze, the canny banker of Central City.<sup>4</sup>

(3) The City Cemetery's connection with the Sand Creek Massacre consisted of the largest funeral ever conducted in early Denver. In April, 1865 Capt. Silas Soule was murdered the night before he was to testify against Major Chivington, commander at Sand Creek. The paper printed the elaborate Order of Procession for the funeral, including state officials, city officials, brass bands, and the entire military contingent from Camp Weld. The principal mourner was Silas's young bride, who "Alas! was draped in weeds before the orange blossoms had time to wither."<sup>5</sup>

With this and other burials, Walley's cemetery business flourished. In 1866, the newspaper reported that 626 bodies lay beneath the prairie sod, including 67 Roman Catholics and 12 Hebrews in their discrete sections east of the general cemetery.<sup>6</sup>

In a few years, Walley's title to the land was challenged; on March 1870 the U.S. Land Office annulled it, but the undertaker said he did not mind because the land would never be worth anything anyway.



Historic Map of the Vicinity of

THE DENVER BOTANIC GARDENS

Italicized lettering indicates names used pre-1890, when the last burials were made in the City Cemetery (present Cheesman Park).

## Congress Park Created

Two years later Jerome B. Chaffee, delegate to Congress from Colorado Territory, settled the land question. He got Congress on May 21, 1872, to declare the land belonged to the United States by right of an 1860 treaty with the Indians, and to issue a patent for cemetery purposes to the Mayor of Denver, Joseph E. Bates, for 160 acres of land at \$1.25 an acre. The city produced the \$200 and officially owned the graveyards on Cemetery Hill.

Of this ground, the city reserved eighty acres as a general burial ground. The forty acres allotted to the Roman Catholics and the ten acres east of that to the Hebrews will be discussed later, as well as present Congress Park, but now let us look at the acres we now call Cheesman Park.

Sections of the City Cemetery were allocated. On July 1, 1873, Mayor Francis M. Case accepted the sum of \$40 in the name of the city from the Odd Fellows Lodges of Denver for the privilege of segregating a spot for their members. An old map shows the insignia of the I.O.O.F. in the east central portion of the graveyard.<sup>7</sup> The Masons lay nearby. On the northern border, bugles sounded taps whenever a veteran of the Grand Army of the Republic was lowered into his grave. Society occupied the highest portion to the east; the potter's field was closest to town — why bother to climb a hill to dispose of a pauper?

By 1876, the unsightly City Cemetery had competition. At 52nd and Race Streets, prominent Denver citizens bought Dr. Morrison's farm to start Riverside Cemetery. With water pumped from the South Platte River, this was the first burial place in Colorado to boast of trees and lawn among the tombstones. In 1890 another group of influential citizens, mostly young men, started another cemetery east of town called Fairmount, watered by the High Line Canal.

The waterless hill in Denver continued to be used, but by the late 1880s real estate subdividers had laid out streets and alleys to the north and sold lots to householders. They complained about a graveyard in their neighborhood — it was unsanitary and an eye sore. It was certainly an eye sore; many markers, imposing when erected, had started to lean and fall into sunken graves. Smiley wrote that the place "was as forlorn and desolate as any spot well could be — treeless, shrubless, waterless, utterly forsaken and neglected except by prairie dogs."

Urged on by the land owners, in January 1890, Henry M. Teller, Colorado's influential senator, promised Congress that if that body would allow the burial ground to be converted into a park, in gratitude the city of Denver would name it Congress Park. The bribe worked — Congress so decreed. Six months later, Mayor Wolfe Londoner declared burials in the City Cemetery unlawful, but by that time it was being used only for bodies from the hospitals and the poor house.

In the late summer of 1890 the mayor gave interested parties ninety days to remove the remains of their beloved dead from the City Cemetery. Some families did this and also re-erected the tombstones. Death dates on markers before 1876 at Riverside, before 1890 at Fairmount, may show where some of these bones found a second resting place. Other bones found their final haven across the Pacific Ocean in China. When the Denver "Celestials" dug up their sacred ones, they did so with ceremony, burning joss sticks and paper dragons while the curious eyes of Capitol Hill boys looked on. The Chinese carefully cleaned the bones, packed them in sawdust, and shipped them home to join the honorable bones of their ancestors. The long black cures were not shipped but were left lying in the City Cemetery where they were picked up

and cherished as souvenirs by American boys. (The eighteen Chinese graves were probably just north of 8th Avenue and High Street.)

After the ninety days for private removals had passed, nothing much was done toward creating Congress Park. In 1893, the mayor awarded to an undertaker named McGovern the contract to move the rest of the remains to Riverside, stipulating that careful records should be kept. McGovern's methods horrified the *Denver Republican*.<sup>8</sup> Its editor unleashed his reportorial hounds on the city officials in general and Mr. McGovern in particular. The resulting stories left no macabre detail untold, but they should be read with the knowledge that the *Republican* was trying to unseat the reigning city officials.

Even if only half-true, the details were unsavory. Since the undertaker was paid \$1.90 for each box of remains, he used small boxes and instructed his eighteen employees to distribute the contents of one grave into two — three — four boxes, throw a bit of sublimate of lime into each box, and firmly close the lid.

The town was as horrified as the newsmen, and presently the mayor ordered all removals stopped, which is the reason that whenever an excavation is made in Cheesman Park (for instance, when the underground sprinkling system was installed), bones and artifacts are exposed.

After the exhumations ceased, the *Denver Republican* fired one more shot at the mayor, saying if he would order the holes filled up — filling the graves had not been in McGovern's contract — the place would look less like Resurrection Day. No leveling was done at that time, but in 1894 the unsightly place was surrounded by a three-board fence with cedar posts. The fence failed to keep out East Denver children who in the spring found sand lilies and johnny-jump-ups and horned toads among the toppled marbles of the pioneer cemetery of Denver.

## REFERENCES

1. Larimer, W. H. H. *Reminiscences of General William Larimer and of his son . . .* compiled . . . by Herman S. Davis. Lancaster, Pa.: Privately printed, 1918. p. 159.
2. Smiley, Jerome *History of Denver*. Denver: The Times-Sun Pub. Co., 1901. Most of the information in this article comes from Smiley. In fact, most of any information about early Denver comes from Smiley, or from the *History of the City of Denver, Arapahoe County, and Colorado*. Chicago: O. L. Baskin, 1880; or from Frank Hall's *History of the State of Colorado*. Chicago: Blakely Printing Co., 1889-1895. 4 vols.
3. *Rocky Mountain News*, Jan. 5, 1920. Obituary of Walley.
4. *Rocky Mountain News*, issues for February, 1864.
5. *Rocky Mountain News*, April 25, 1865.
6. *Rocky Mountain News*, May 16, 1866, p. 4, col. 1, under the heading "Grave Statistics."
7. *Thayer's Map of Denver, Colorado*. Denver: Thayer and Stubbs, 1872.
8. *Denver Republican*, issues for March 1893.







# About Seeds and Seedsmen

**Bernice E. Petersen**

The availability of fresh food and produce was a vital factor in settlement of early Colorado; in fact some of the first nurseries began as gardens catering to the wants of miners, timber seekers, or settlers who traveled westward. Seeds and seedsmen were important segments of the horticultural development in Colorado and the nation.

A parcel of seed mailed from Germany to Lawrence, Kansas in the early 1860s was the beginning of one of the West's largest farm and garden supply companies.

A baker named Barteldes had asked German relatives for seed to plant a vegetable garden in this frontier community. Friends and neighbors were impressed with his harvest of fresh produce and asked that he order seed for them. The following year the baker obtained a larger parcel and the next, an even larger one.

In 1867 a business-minded nephew, Frederick W. Barteldes, realized that this need was his opportunity to establish a company to distribute farm and garden seeds. In 1882 a member of his Kansas firm came to Denver and entered into partnership with a local seed firm, Green and Partridge. Soon one of the partners left and by 1885 the Barteldes Seed Company was sole owner. The company, with branches in Denver and Oklahoma City, was incorporated as a Colorado corporation in 1906 but headquarters remained in Kansas until 1969.

During those early years traveling salesmen took orders from farmers and stores handling general merchandise, groceries or hardware. During winter months they filled their orders for shipment in spring. The territory extended from Montana to El Paso, Texas and included the Dakotas and states west of the Mississippi to Arizona, Utah and Idaho.

Primarily a wholesale business, in 1906 the Barteldes Seed Company built a five-story warehouse at 16th and Wynkoop Streets and maintained a retail outlet at 1521 Fifteenth Street. After almost 50 years, in 1953, the founder's son, Armin Barteldes, then manager, built a combination warehouse and garden shop at 40th and Jackson Streets where the firm continued until his retirement 15 years later.

Mr. Barteldes served as finance chairman of Colorado Forestry and Horticulture Association for a number of years, and when M. Walter Pesman as representative of the association journeyed to the Fifteenth Horticultural Congress in Nice, France in 1958, Mr. Barteldes furnished 1,000 packets of Rocky Mountain columbine seed (*Aquilegia caerulea*, James) to give to delegates there and to various European firms.

# Catalog Collection Survives

Currently the business continues as The Barteldes Company, distributors of turf equipment and supplies, with Dale Moody, owner. Fortunately for historians Mr. Moody maintains a collection of Barteldes' catalogs dating beyond 1906 including one treasure published in 1882. A nail hole is mute proof of its equal suitability as insulation material which was installed in an early Englewood residence, recently torn down.

Interestingly, Barteldes also published seed catalogs in Spanish and did an extensive export business, shipping to Colombia, Argentina, Ecuador, Mexico and Peru. Tree seeds were another export. In autumn a number of self-employed collectors in the mountains would rob squirrel caches of spruce, pine, and fir cones. For each bushel of cones taken they left one pound of corn, approximately the nutritional value of the stolen nuts. After most debris had been removed the seeds were delivered to Barteldes where they were cleaned and packaged for shipment to France, Germany, Denmark and Austria for germination in the managed forestry programs of those countries.

European countries, especially Germany, were the major source of vegetable seeds for the United States and Great Britain until World War I. Then and during the second war Barteldes joined others in emergency seed production. Large quantities of carrot and onion seeds were produced near Delta, Colorado; beans, radishes and peas were grown near Greeley; and of course melon seeds were harvested around Rocky Ford.

Weather-worn and Torn —  
One of the Earliest Colorado  
Seed Catalogs



Designed for the Export Trade, this Catalog Showed Colorado Products Overseas



An interesting beginning in seed production occurred in 1877 when George W. Swink planted half an acre to melons near Rocky Ford. Melon production by 1890 was a commercial enterprise that grew until more than 1,000 acres were planted for market melons. Distance to market, however, caused the industry to decline until a certified seed production program was begun in 1951. According to a report by Charles M. Drage, extension horticulturist in charge of watermelon seed production, in 1957 more than 1,000 acres were planted for seed production — enough to plant more than 100,000 acres, nearly one-fourth the total acreage of melons grown for market in the United States.

Another sidelight about seed growing in Colorado was told by Lillie Fleischer, again in 1957. At that time Burrell Seed Co. of Rocky Ford produced about 200 pounds of zinnia seed per one and a half acres which was sold to Northrup-King, Ferry, Vaughan and other important seed companies in the United States. William Burrell's grandfather had started his business venture raising cantaloupe seed and had originated several varieties. The elder Burrell, like so many early settlers, had come to Colorado for his health and became so ill he was put off the train at Rocky Ford. The climate proved beneficial and he lived to create a seed company there.

In 1891 another pioneer seedsman arrived in Colorado to begin work for Barteldes and Company as a traveling salesman. At an early age Charles R. Root had invested in an "Excelsior" printing press and an assortment of type. After four years he sold out for \$500 and traveled to Lansing, Michigan and eventually to Rockford, Illinois. There an older brother who operated the J. V. Root Company, Seedsman, induced Charlie to work for him raising tomato, pepper and squash seed. Soon Charles felt that he could be more effective in promotion work and prevailed upon the company to install a printing press. In 1888 he got out his first list for the seed trade. He returned to New York for a short time, then arranged by telegraph to come to Barteldes in Denver for \$65 a month. Within three years he became manager of the Denver branch and continued in that capacity until he with two associates organized the Colorado Seed Company at 1515 Champa Street in 1908.

He had joined the American Seed Trade Association in 1888 and was an early member of the Denver Chamber of Commerce. He was active in the Colorado Forestry Association in its early years and was president of the Colorado Seedsmen's Association. His daughter, Dorothy, assisted him in his business for 25 years. In 1943, after 37 years' service, Howard Roerig left Barteldes to manage Colorado Seed Company until it was sold to Jordan Gagnon.

Several employees, during the years, went on to join Simpson Seed and Floral Company which also was founded about 1908 by Art and Charles Simpson. In 1945 Earl Phipps, who had managed the nursery department at Colorado Seed, bought Simpson and remained there until his retirement in 1965. Mr. Phipps served as a trustee of Colorado Forestry and Horticulture Association for many years.

Colorado's healthful climate lured Fred C. Vetting Sr. to this area in 1906. He and a brother-in-law had owned Manitowoc Seed Co. in Wisconsin where they maintained commission racks in various outlets. Racks were stocked with 5-cent seed packets from which customers made their selections.

Mr. Vetting started a feed and seed store in Arvada to supply market gardeners and poultrymen. When war broke out in 1917 he began handling produce and in 1920 he formed Rocky Mountain Seed and Produce Co., another commission rack business providing feed and seed items for home and commercial gardeners, independent nurseries and garden shops. Colorado and Texas were the principal markets for produce which was finally discontinued about 1952. Nursery stock including fruit trees and roses were also important in their inventory.

Despite two bank failures, Rocky Mountain Seed has managed to remain in the same location at 1325 Fifteenth Street for 56 years. Poultry feed sustained them during both economic crises and out of sheer sentiment the Vettings continue to sell feed for racing pigeons and for wild birds.

Now managed by sons Fred and Kenneth, Rocky Mountain Seed's wholesale and mail order business is important as well as its retail store where they handle bare-root roses, bulbs, seeds, garden equipment, and supplies.

An unusual practice carried on yet today in the retail store is the policy that when the seven-member sales force is unable to service customers within the store satisfactorily the doors are locked and later are opened for the next group of customers. Although seedsmen had a common practice of stealing help trained by other seedsmen, according to Kenneth Vetting, his father, who lived to age 83, raised his own assistants — eight children in all — and indeed, the company has managed to outlive its competition!

Elmer Hartner as reported in *The Denver Post* began a produce brokerage business in 1908 with \$293. The City Directory first lists the firm in 1909. For a short time the business was listed as Sawdrey & Hartner at 1463 Blake Street and by 1910 was Hartner Produce at 1425 Fifteenth Street. Mr. Hartner acquired Burton Produce Company and began Western Seed Company shortly thereafter. This auxiliary firm sold seed to farmers, a form of subsidy to encourage them to return their harvests to Western for marketing throughout the United States. At one time the firms operated six warehouses and handled celery, lettuce, cabbage, potatoes and other crops from truck gardens along the Platte River, 150 acres of pascal celery near South Santa Fe Drive and Oxford, most of the potatoes in the San Luis Valley, lettuce and other vegetables produced high in our Colorado mountains, and all of the lettuce in California's Imperial Valley as well as 10,000 acres of citrus fruits near Phoenix.

The seed company distributed milo and millet for birds and poultry, bought fields of roses in California for cold storage here and later shipment in spring. Nursery



stock including evergreen and fruit trees, Canadian and Michigan peat was packaged for shipment.

After W. H. Patterson died in the early 1950s Paul Sawyer, son-in-law of Mr. Hartner, managed the business until it was sold about five years ago to American Garden Western — wholesale distributors for a number of brand name garden products.

While the popular pastime during the '20s and '30s was training seedsmen only to find they had been lured by the competitor, this activity now might be considered full-circle, for Steve Sawyer, grandson of Elmer Hartner, started packaging and delivering seeds for Western in 1956 and is now associated with our earliest company, Barteldes, as a manager of heavy equipment.

And now Botanic Gardens House is the former Hartner residence purchased by Dr. and Mrs. James J. Waring in 1958 to become administrative headquarters for our Denver Botanic Gardens.

Editor's Note: To many gardeners J. D. Long is remembered as founder of Long's Seed Store in Boulder and for his catalog, punctuated with bits of philosophical humor. Perhaps he preferred to be remembered as an outstanding horticulturist. He will be considered among Colorado's Early Horticulturists in a future article.

#### REFERENCES

Conversations with Wayne S. Rice, who was associated with Barteldes Seed Company for 43 years. He also furnished helpful suggestions for additional contacts.

Conversations with Mrs. Earl Phipps, Simpson Seed Co.; Harry Atkinson, Colorado and Simpson Seed Co.; Steve Sawyer, Western Seed Co.; Kenneth Vetting, Rocky Mountain Seed Co., and Wm. H. Lucking Jr. who offered numerous clues.

Roerig, Howard F., "Charles Reno Root" in *The Green Thumb*, Jan. 1945.

Fleischer, Lillie B., "Zinnias by the Acre" in *The Green Thumb*, Oct.-Nov., 1957.

Drage, Chas. M., "Colorado's Watermelon Paradise" in *The Green Thumb*, Oct.-Nov., 1957.

---

## We're Sorry

---

An article in the Spring issue of *The Green Thumb* omitted some important information in regard to the Garrison Frieze. The members of the Editorial Committee of *The Green Thumb* and the officers and directors of the Botanic Gardens are genuinely sorry for the errors made and for the unnecessary affront to some generous donors.

The Garrison Frieze was part of the original decor of the Midland Federal Savings and Loan Association building in downtown Denver. In the course of remodeling the building, the Frieze was removed. The major section of the Frieze was given to the Botanic Gardens and has been placed in a wall facing the Plains Garden. The excellent condition of this part of the Frieze attests to the concern felt by the Midland Federal Savings and Loan Association for the sculpture.

The Botanic Gardens considers it a genuine privilege to be able to help preserve this fine work of art by a noted Denver sculptor. The Plains Garden has been officially designated the Laura Smith Porter Plains Garden, honoring the mother of Mrs. Ruth Porter Waring. Mrs. Laura Smith Porter as a pioneer citizen crossed the Great Plains to Denver in a covered wagon of the sort depicted in the Frieze.

It is only through the continuing generosity of such business firms as Midland Federal Savings and Loan Association and of such individuals as Mr. Marvin Buckels, executive vice-president of Midland, that the public service activities of the Botanic Gardens can be maintained at a high level.



# Bicentennial Garden Plants and Ideas

Glenn Park

This is the year for red, white and blue gardens. During this bicentennial year a large number of gardeners will be using the red, white and blue theme in their yards. It is hoped that this article will be helpful in planning and planting your flower gardens using the bicentennial colors.

If you are interested in doing a formal design such as a star, liberty bell, or flag, then planning is necessary. Draw your design on graph paper so that a proper scale can be used. Select a garden site that receives as much sunshine as possible, unless you want to do a shade garden. Keep in mind that garden annuals prefer a rich, moist, well-drained soil.

After selecting the site, lay out the design using stakes and twine. In a formal design it is best if you can use annuals that are of the same height and somewhat similar growth habits.

Petunias work very well for most designs. The Old Glory series (Red, White and Blue) is new for 1976 and these flowers look well together. The blue comes into bloom a week or two later than the red and white, but by midsummer the three are showy. Keep in mind that there are no true blue petunias; they all have a purplish tinge to them. Another series to use is the Cloud Petunias, 'Red Cloud,' 'Blue Cloud' and 'Snow Cloud.' Another combination is 'White Cascade,' 'Malibu' and 'El Toro.' If you enjoy the double type of petunia, then try 'Bridal Bouquet,' 'Blue Bouquet' and 'Red Bouquet.' Finally, a multiflora petunia combination could consist of the Joy series, 'Blue Joy,' 'White Joy' and 'Red Joy

Improved.' The closest petunia to true blue is 'Malibu.' All the petunias should be spaced approximately one foot apart.

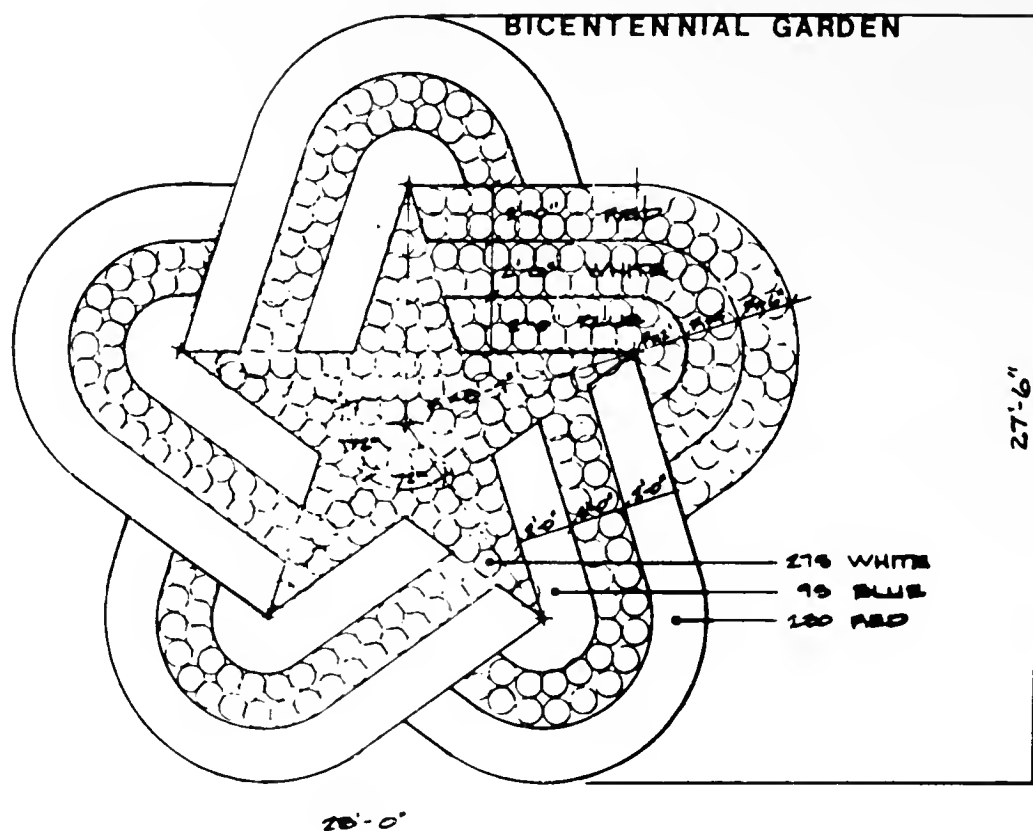
There are many kinds of annuals that work well together. Try ageratum 'Blue angel' or 'Blue Blazer' with verbena 'Blaze' and verbena 'Crystal.' Or for a mixed planting of red, white and blue you can use verbena 'Spirit of '76.' Another combination could be geranium 'Sprinter,' 'White Cascade' petunia and ageratum 'Blue Angel.'

Some others to try are: ageratum 'White Blazer,' alyssum 'Snow Cloth Select,' celosia 'Fiery Feather,' celosia 'Red Fox,' celosia 'Crusader,' geranium 'Sprinter-white,' nicotiana 'Nicki-white,' nicotiana 'Idol,' salvia 'Catima,' salvia 'St. John's Fire,' salvia 'Red Pillar,' snapdragon 'Floral Carpet White,' snapdragon 'Floral Carpet Red,' verbena 'Amethyst,' vinca 'Little Blanche.'

A number of designs for formal type bicentennial gardens are available in the Denver Botanic Gardens library, filed under Landscape Gardening.

Mention was made earlier of a shade garden. The plants used here could be begonia 'White Comet,' begonia 'Viva,' begonia 'Othello,' begonia 'Scarletta,' begonia 'White Tausendschon,' impatiens 'Elfin Blue' (not true blue), coleus 'Care-free Jade,' coleus 'Carefree Scarlet' and lobelia 'Crystal Palace.' The bronze-leaved begonias will do well in sunny locations as well.

There are numerous other annual cultivars to use — only a few have been suggested here. March and April is the time to start these bedding plants from seed but if you decide to purchase



plants at a garden center your choice of variety may be limited.

This summer, the Denver Botanic Gardens will display several flower gardens using the bicentennial theme. On either side of the steps leading to the flagpole area of the parking lot will be a liberty bell and the Colorado Flag. The liberty bell will feature alternanthera 'Maroon Red' and 'Yellow,' marigold 'Panther,' marigold 'Yellow Nugget' and the numbers 1776 and 1876 in alyssum 'Snow Cloth Select.' The Colorado flag will be in marigold 'Show Boat,' petunia 'Red Cloud,' petunia 'Snow Cloud,' petunia 'Blue Cloud.'

The long narrow bed facing York Street will contain celosia 'Fiery Feather,' petunia 'Blue Cloud' and petunia 'White Cloud.' the beds around the flagpole will be in petunia 'Old Glory Red,' 'Old Glory Blue' and 'Old Glory White.'

The large curved beds along York Street will be planted with geranium 'Sprinter,' petunia 'White Cascade,' petunia 'Mariner' with marigold 'Showboat' as a yellow color accent.

The walk leading towards the Botanic Gardens House (known as Linden Allée)

will be planted on both sides with a star design encircled by red and blue colors. This area will use the following plants: geranium 'Sprinter,' marigold 'Showboat,' agertum 'Blue Angel,' verbena 'Blaze,' alyssum 'Snow Cloth Select,' marigold 'Yellow Nugget' and all of this edged by dusty miller 'Silver Dust.'

Another design using a contemporary flag with numerals 76 in it will be planted to the south of the view mound. This design will use petunia 'El Toro,' verbena 'Blaze,' ageratum 'White Blazer,' verbena 'Amethyst,' verbena 'Crystal' and petunia 'Glacier.'

The last bicentennial design will be planted on the east slope of the mount to the west of the view mound. This will consist of two large flags, one with 13 stars and the other with 50 stars, all bordered in yellow. The plants in this display will be marigold 'Yellow Nuggets,' ageratum 'Blue Angel,' verbena 'Blaze,' verbena 'Crystal' and matricaria 'White Stars.'

The staff at the Botanic Gardens hopes you will be able to visit the garden to view these displays. Bring plenty of film.

# Exotics of COLORADO



## Peach

*Prunus persica*

Helen Marsh Zeiner



One of Colorado's most important agricultural industries is based on an exotic plant, the peach (*Prunus persica* Sieb. & Zucc.). This valuable crop is widely known and home canners in other states watch for Colorado peaches.

*Prunus persica* is native to China where its cultivation has been traced back to the tenth century B. C. The Chinese have many legends and superstitions about the peach, and it is represented in sculpture and on porcelain.

The peach reached Persia from China, perhaps carried by caravans moving into Kashmir, Bakhar, and Persia. It has been

so long established in Persia that Persia is sometimes credited with being its original home. The species name *persica* indicates its connection with Persia.

*Prunus persica* arrived in Europe at about the beginning of the Christian era. The ancient Romans knew and enjoyed the peach. Pliny, writing in 79 A.D., said that peaches were brought from Persia not many years before.

Peaches are said to have reached England about the middle of the sixteenth century, probably from France. In 1883, the famous French botanist DeCandolle listed the peach among the

plants cultivated for over 4000 years in Europe.

The history of the peach in America parallels the coming of the white man. It is known that the Spaniards brought peaches to Mexico and Florida. Peaches were well-suited to the climate, the Indians liked the fruit, and by the time the English colonists came Indian peach "orchards" were widespread in the south. In fact, peaches were so thoroughly established that some of the early botanists thought them native to America. Some of these trees, although inferior in fruit, are still used as rootstocks.

Colonists who had known the peach in England began to bring in better varieties. Peach stones were among the seeds ordered by the Governor and Company for Massachusetts Bay Colony in 1629. In 1664, Stacey, writing about New Jersey, said "we have peaches by cartloads". William Penn said of Philadelphia in 1683 that "there are very good peaches in great quantities".

George Robbins of Easton, Maryland, imported seeds of peaches in 1735 and that year Maryland's Peach Blossom Plantation was named.

The Chinese cling, from which many modern varieties have been derived, was brought to New York State from England in 1850. This was a superior variety at that time.

In Colorado, the peach came with the farmers who brought both pits and plants across the plains and planted them at various places in the state. The Western Slope was early recognized as suitable for peach growing.

Among the first to grow peaches was a Mr. Harlowe on Rapid Creek two miles east of Palisade, who had only a few trees. Others planted more extensive orchards.

The M. N. Everett farm at Wheatridge had 1600 seedling peach trees which produced some fruit in 1875.

William E. Pabor in 1882 bought four sections north of what is now Fruita. In 1883 he laid out ten or twelve tracts which he planted to fruit — apples, pears, cherries, apricots, and grapes as well as peaches. Pabor was the founder of Fruitvale, the first fruit-tract community laid out in Grand Valley. This was centered around the present town of Fruita and was not the Fruitvale east of Grand Junction.

Charles Steele and Elam Blain are credited with producing the first apples and peaches in Grand Valley. Their orchards were two or three miles east of the present site of Grand Junction and were planted at about the same time as those of Pabor.

In 1883 it was reported that D. M. Rose in the Fontaine qui Bouille valley south of Colorado Springs had some 50 trees, entirely seedlings; "some have fruited for the last four years, producing very good peaches". Rose and Miller of Colorado Springs are said to have set out the first large peach orchard east of Fruita.

S. A. Wade, in the spring of 1882, brought in a variety of young fruit trees, including 20 Early Golden York, Hale's Early Crawford, and Early Stump peaches. After shoveling snow for three weeks on Black Mesa, Wade reached his ranch (now Paonia). He unpacked his trees (which had been in transit for two months) on April 21, 1882 and trenched them. He built a two-mile irrigating ditch for his orchards.

In Montrose County, Judge Bell had a 65 acre orchard on mesa land at 6700 feet. Planted in 1889, this orchard included 3000 peach trees as well as other fruit. In 1891, Rose and Hughes had 80 acres planted with 12,000 trees in prime and bearing abundantly.

Although some early orchards failed because of location or because of water-logging from constant irrigation, the peach industry in the Grand Valley area

became firmly established. It was so important in 1896 that a peach day was held in Grand Junction. In 1908, "Palisade Peach Day" was held in Denver in the offices of the Colorado Midland. The following year, a carload of cantaloupes and Palisade peaches was sent to Denver for advertising purposes. After a parade, the fruits were given away from the Colorado Midland offices.

From 1890 to 1902, Mesa County won first premium for fruit displays at all of the Colorado state fairs but one, attesting to the superior size and quality of Grand Valley fruit. *The Fruitman's Guide*, published in New York, spoke in 1909 of Elberta peaches from Grand Valley as "in a class by themselves, the finest in the world."

Since peaches were first brought to Colorado, varieties have changed and have been improved. One seldom hears of Early Golden Yorks, Early Stump, Early or Late Crawford's or Amsden, but the famous Elberta, Polly, Hale Haven and other Hale varieties have become household words.

Peaches are not recommended for the Eastern Slope of the Colorado Rockies or for the plains because neither soil nor climate is suitable. Peaches generally bloom very early in the spring and late

frosts destroy the fruit. Also, the trees often winterkill. However, there are bearing peach trees to be seen in Denver and other "forbidden" areas. These are trees which receive some protection and a little extra care. They seldom fruit every year, but some years they may produce good crops. If you live on the Eastern Slope or on the plains and want to try a peach, remember that it is a gamble. If you are willing to take the risk and disappointment of no crops some years and at best a short-lived tree, try a peach — otherwise, plant cherries, plums, or apples which have been proved dependable for this area.

#### REFERENCES

- Hedrick, U.P. *A History of Horticulture in America to 1860*. New York: Oxford University Press, 1950.
- Hedrick, U.P. *Sturtevant's Notes on Edible Plants*. Albany: J. B. Lyon Company, State Printers, 1919.
- Pabor, W. E. *Fruit Culture in Colorado*. Denver: W. E. Pabor, 1883.
- Rait, Mary. *Development of Grand Junction and the Colorado River Valley to Palisade From 1881 to 1931*. Boulder: University of Colorado, Dept. History. Unpublished Thesis, 1931.
- Steinel, Alvin T. *History of Agriculture in Colorado*. Fort Collins: State Agricultural College, 1926.





# Ground Covers for Colorado

George W. Kelly

Any gardener who has spent a few days in California always comes back to Colorado wondering if there are plant substitutes for lawns here as there are on the Pacific coast. They want plants that will tolerate much heat and little rainfall, are pest free, are easily propagated, need no mowing, and cover bare ground quickly. If such a plant also has attractively colored leaves or flowers and will stand some walking on, it is even more desirable.

We must begin by saying that "There ain't no sech animal." Our arid-alkaline climate does not encourage such plants. A good grass — bluegrass for particular places and wheatgrass for less important places — is still the easiest and cheapest to maintain. We can also learn to use certain inanimate ground covers in appropriate places — materials such as gravel, aggregate in various colors, flagstone, brick, concrete, or even shallow water basins.

But, there **are** many plants that have never been given much of a trial. We should begin to experiment with these and find out more about their desirable qualities. Many of the really effective ground covers have been considered terrible weeds, but under certain conditions as on steep, dry banks, such plants are exactly what is needed. Other useful ground covers are essentially rock garden plants and grow so slowly that it would be prohibitive to try to cover any large area with them.

We do have many native plants that have been covering the ground in various situations for thousands of years. If we will try them out we may discover some that will be just as good for us as those used in California are for that locality. In certain places where it is not necessary to walk over the area and soil erosion is the main problem, taller plants or vines or evergreens can well be used. Soils, slopes, sunshine, and precipitation vary much in different places and a little experimentation is necessary to discover what will grow most satisfactorily in each location.

Some of the plants mentioned here may not be readily available, but if they prove useful and there is sufficient demand for them the nurseries will propagate and stock them.

For our purpose we have eliminated some of the less effective plants to



Pussytoes

simplify this list. Three divisions have been made. 1. Low ground covers (under 6 inches) tolerating hot, dry situations, easily propagated and spreading reasonably fast, 2. Plants for shady, moist, or protected spots, and 3. Taller plants (6 to 24 inches) in perennials, shrubs, vines, and evergreens.

## 1. Low Hot Areas

*Ajuga reptans* L., BUGLEWEED. This plant takes first place in more ways than the alphabet. It has nice overlapping leaves and attractive flowers, is most versatile as to its preferences, is easily propagated, and spreads well.

*Antennaria* Gaert. spp., PUSSYTOES. A native plant with several good species, it tolerates drouth and walking on. It transplants well, has attractive flowers; stems may be mowed off after bloom. Can be collected from the wild but is easily propagated from seed.

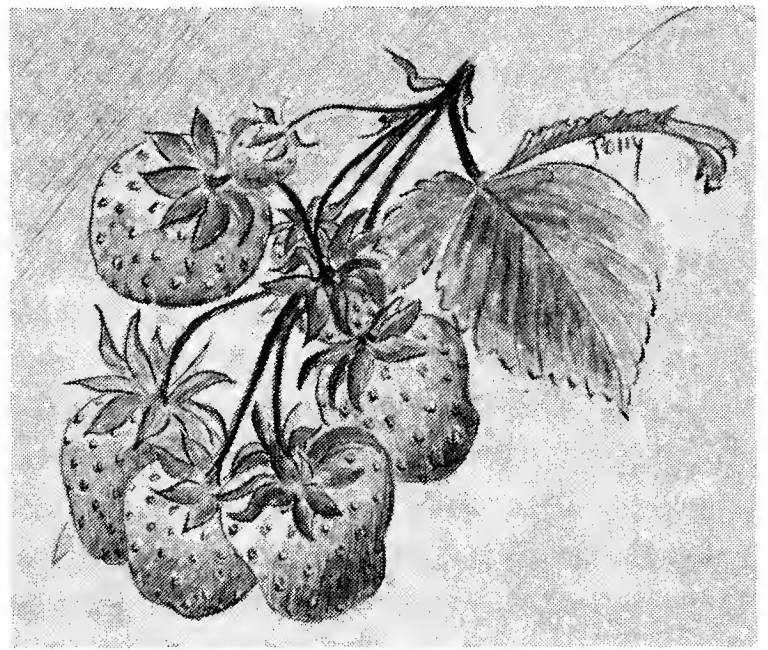
*Arctostaphylos uva-ursi* Spreng., KINNI-KINNICK. These low, compact, evergreen woody plants spread slowly in well-drained places. Dark green leathery leaves, pink flowers, and bright red berries make it distinctive the year around. It is slow to start but spreads over large areas.

*Cerastium tomentosum* L., SNOW-IN-SUMMER. This is an old rock garden favorite, really too aggressive for that purpose, but ideal for ground cover. Having attractive gray foliage and white flowers, it propagates easily by division. Other members of the genus, chickweeds, may be equally effective.

*Convolvulus* L., BINDWEED. One of the most persistent of weeds with deep roots and drouth tolerance, bindweed is hated as a weed, but it has the best combination of good qualities as a persistent ground cover.

*Euphorbia myrsinites* L. MYRTLE SPURGE. A very drouth resistant plant with evergreen foliage, this spurge has small, greenish-yellow flowers (bracts) in spring. It propagates easily by cuttings. Some people are allergic to its milky sap. Other species of spurge may also prove useful for ground cover.

*Fragaria* L. spp., STRAWBERRY. Strawberries are rapidly becoming popular as ground cover. Easy to propagate, they spread rapidly, have attractive foliage and flowers and edible fruits. The wild forms are probably the most useful.



Strawberry

*Lysimachia nummularia* L., LOOSE-STRIPE. This trailing vine has habits similar to the familiar *Vinca* but yellow flowers. Propagates easily by division and spreads rather quickly to cover large areas in sun or shade.

*Mahonia repens* Don (*Berberis repens* Lindl.) HOLLY-GRAPE. A good native with attractive, evergreen, holly-like foliage, yellow flowers, and blue fruits, holly-grape spreads slowly but persistently. Hard to transplant from the wild, it propagates easily from cuttings or seeds.

*Medicago lupulina* L., BLACK MEDIC, YELLOW TREFOIL, JAPANESE CLOVER. Small, frail-looking vines prove very hardy and persistent (when in lawns, at least). Its qualities should make it a good ground cover for difficult places.

*Nepeta Hederacea* Trev. (*Glechoma hederacea* L.) GROUND IVY. This rapid-growing, weedy little vine will cover a large area quickly with its loose growth, small roundish leaves, and small blue flowers. Hardy, it propagates easily.

*Oenothera* L. spp., EVENING PRIMROSE. Native plants of several kinds grow in banks of loose soil and spread widely by underground runners. They have attractive flowers opening fresh each day. They do not form a dense cover.

*Penstemon* Mitchell spp., CREEPING PENSTEMON. Very low plants cover large areas in the wild with true blue flowers. *P. crandallii* Nels. and *P. teucrioides* Greene are two good ones. May be difficult to get started unless clumps can be obtained from the wild. (Ed. Note: *P. pinifolius* Greene, has red blossoms.)

*Phlox* L. spp., TRAILING PHLOX. The cultivated *P. subulata* L. varieties in several colors are the most attractive of all ground covers but spread slowly, while the wild species, *P. longifolia* Nutt., though not as dense, is hardier.

*Potentilla* L. spp., CINQUEFOIL. Several native species, having yellow flowers with green or silvery foliage might prove worthy of trial: *P. concinna* Rich., *P. anserina* L., *P. verna* var. *aurea* L., and *P. latifolia*.

*Saponaria ocymoides* L., SOAPWORT. A beautiful spreading plant in the pink family forms solid masses of foliage, covered in season with pink flowers.

*Sedum* L. spp., STONECROP. Sedums are very adaptable succulents in a variety of forms and colors. Some species spread rapidly and are popular with Japanese gardeners as lawn substitutes. All have attractive bloom and tolerate some walking on.

*Sempervivum* L., spp., HEN AND CHICKENS, LIVE-FOREVER. Many species, all succulent, spread slowly but are extremely drouth resistant and hardy. Separate easily to start new plants. Retain small banks well.



Lily-of-the-Valley

*Thymus* L. spp., THYME. Several species of these very low ground covers are much used between flagstones in English

gardens. They are fragrant when walked on. They propagate by division, spreading slowly.

*Trifolium* L. spp., CLOVER. Some of the clovers are too tall to be useful, but several low ones including *T. repens* L., white Dutch clover, make excellent ground covers and are easily started from seed.

*Veronica* L. spp., SPEEDWELL. Several of the common rock garden veronicas are hardy and persistent enough to make good ground covers. They have blue, white, or pink flowers. Some foliage is evergreen.

## 2. Shady Moist Areas

*Campanula* L. spp., BELLFLOWER. Several species of bellflowers are low and creeping with good foliage and flowers but are rather delicate and prefer some shade and moisture. *C. portenschlagiana* Roem. & Schult., *C. isophylla* Meretti, and *C. garganica* Tendre are effective.

*Convallaria majalis* L., LILY-OF-THE-VALLEY. This is an old favorite for

planting on the north side of a house. It has nice foliage and fragrant flowers, is persistent, but spreads slowly.

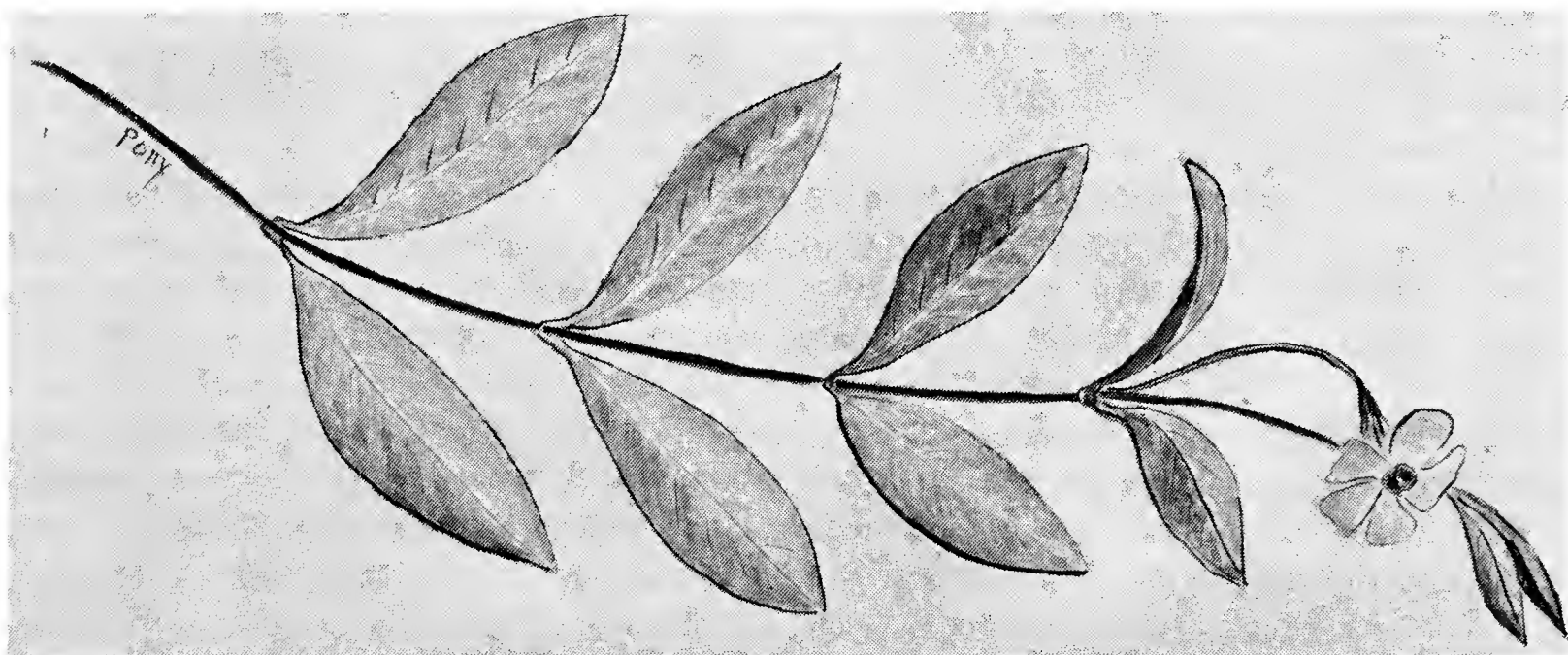
*Euonymus fortunei* var. *coloratus* Rehder., WINTERCREEPER. This evergreen vine or creeper with glossy leaves grows slowly but eventually covers considerable space.

*Hedera helix* L. ENGLISH IVY. English ivy with its leathery evergreen leaves forms excellent ground cover in shady locations. It spreads slowly but will cover quite an area in time, often rooting at the joints.

*Lotus berthelotii* Masf., PIGEONS BEAK. This is a small vine with small flowers which spreads slowly. It is not well known but is an interesting plant for protected places.

*Viola* L. spp., VIOLETS AND PANSIES. Will often seed themselves and cover considerable areas with their pleasant foliage and flowers.

*Vinca minor* L., CREEPING MYRTLE. Forms one of the best ground covers for protected places. Has glossy evergreen foliage and attractive blue flowers. Propagates easily.



Creeping Myrtle



### 3. Taller Plants (Six to 24 inches.)

*Achillea millifolium* L., YARROW. Persistent weed in the lawn, yarrow is very hardy and grows anywhere. It has aromatic, gray-green, ferny foliage with creeping stems, and white flowers. Will spread densely if mowed.

*Aegopodium podagraria* L., BISHOPS-WEED OR GOUTWEED. Found in many old gardens, it is persistent and a pestiferous weed when not controlled. Variegated leaves make it interesting.

*Alyssum saxatile* L., *A. montanum* L., BASKET-OF-GOLD. Attractive rock garden plants bear yellow flowers in season. Both spread quickly to cover large areas.

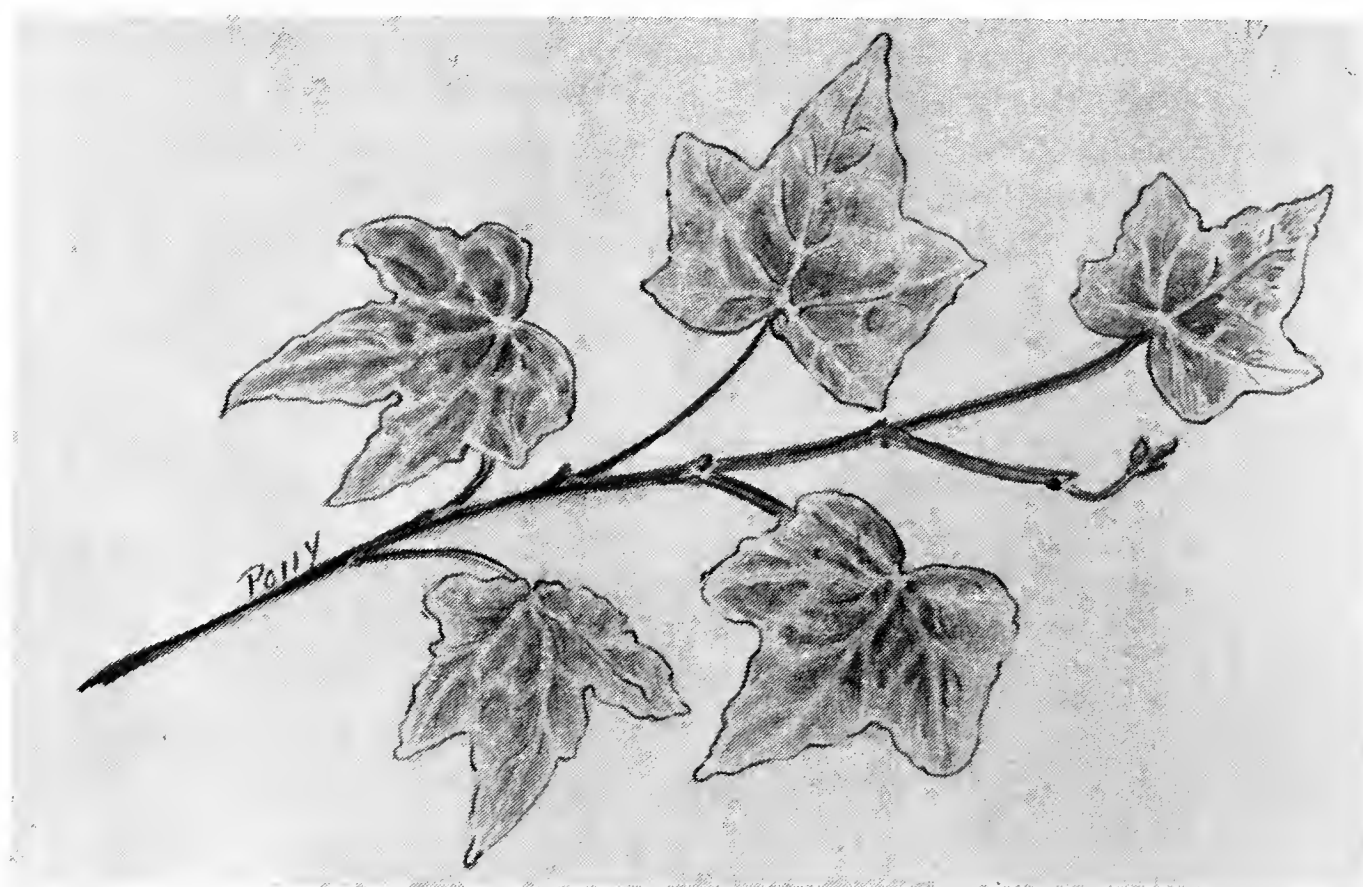
*Artemisia* L. spp., DWARF SAGE. With attractive gray foliage, these plants are very drouth resistant. Useful species include *A. frigida* Willd., *A. nova* A. Nels., *A. schmidtiana* Nana, and *A. dracunculus* L. Some can be mowed and can stand tramping.

*Aster* L. spp., WILD ASTERS. Several native asters will grow low, stand mowing, and spread widely. They have attractive foliage and flowers. *A. laevis* L. is a good one.

*Campanula rapunculoides* L., CANCER-OF-THE-GARDEN. One of the most persistent weeds in a garden, it has beautiful blue bellflowers. Its root system makes it an ideal ground cover, but it is hard to keep in its place.

*Clematis ligusticifolia* Nutt., WESTERN VIRGINS BOWER. This really beautiful vine spreads widely or climbs. Many small white flowers and white fuzzy seed heads make it showy until fall. It is very hardy.

*Coronilla varia* L., PENNGRIFT CROWN VETCH. This highly advertised ground cover, more useful in the east, will grow here in some places. It covers vast areas and spreads by underground runners which are persistent. It is quite likely that some native vetches would be better adapted to Colorado.



English Ivy



*Cotoneaster* spp., COTONEASTER. All are woody shrubs and some species are low and spreading. *C. dammeri* Schneid., *C. horizontalis* Deene, and *C. microphylla* Wall. would be good to try.

*Eriogonum* Michx. spp., BUCKWHEAT. Many buckwheats are native to Colorado and several of them are low, dense, and hardy, making them valuable for ground cover. Research is needed to determine the best ones for this purpose.

*Franseria tomentosa* A. Gray, POVERTY WEED. Another pernicious weed which can be used for ground cover where it can be restricted, *Franseria* has silvery-gray foliage.

*Juniperus* L. spp., TRAILING JUNIPERS. These evergreens, some spreading widely, are slow and expensive to start but are very effective in restricted places. *J. horizontalis* Moench., *J. horizontalis* var. *wiltonii* More, *J. horizontalis* var. *marshalli* More, *J. chinensis* var. *sargentii* Henry, *J. chinensis* var. *procumbens* Endl. have been used extensively and are generally available.

*Lonicera japonica* var. *halliana* Nichols, HALLS JAPANESE HONEYSUCKLE VINE. Where a vine is useful, this is the best, quickest, and cheapest possible. It has almost evergreen foliage and fragrant, waxy-white flowers. Other species of honeysuckle can be used but are not as fast growing nor as attractive.

GRASSES. *Pennisetum setaceum* (Forst.) Chivv., FOUNTAINGRASS, *Phalaris*

*arundinacea* L., RIBBONGRASS, *Miscanthus sinensis* Anders. are all persistent spreaders and may be useful as ground covers in proper locations.

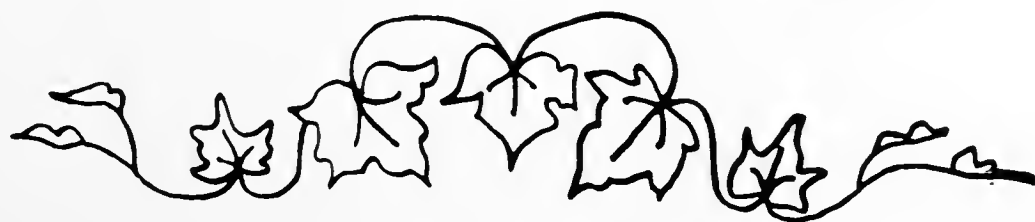
*Polygonum reynoutria* Makino, FLEECE-FLOWER. A beautiful plant with neat foliage and flowers is too persistent for rock garden use, but makes excellent ground cover if contained.

*Polygonum aubertii* Henry, SILVER-LACE VINE. Although usually used as a climbing vine, silver-lace will spread over the ground as cover and is very drouth resistant.

*Parthenocissus quinquefolia* Planch., WOODBINE, VIRGINIA CREEPER, ENGELMANN IVY. An old favorite as a climber, Virginia creeper if it has nothing to climb on spreads quickly over the ground to cover large areas. Gaudy fall color adds to its usefulness.

*Rosa* L. spp., WILD ROSE. Several species of wild roses are native to Colorado and are adaptable as high ground covers, for they spread from runners to cover large areas. Combine well with snowberries.

*Symphoricarpos* Duhamel. spp., SNOW-BERRY. Several species of snowberry are especially adapted to making high ground covers. They spread widely in time. The white fruit is attractive, especially in combination with roses. (Ed. note — Some gardeners have observed that galls often occur when wild roses and snowberries are planted together.)



# FOCUS ON

## Sapodilla

*Achras zapota* L.

Peg Hayward

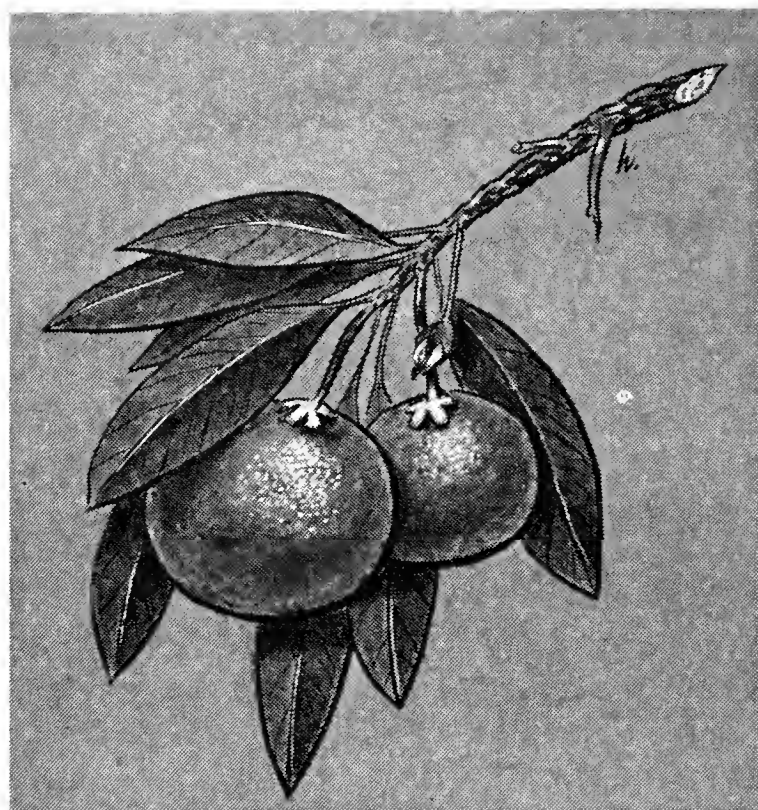
in the

Boettcher Memorial Conservatory

*Achras zapota* L. syn. *Manilkara zapota* Royen, commonly known as sapodilla or naseberry, is native to Mexico and Central America. The family, *Sapotaceae*, to which this tree belongs contains over 400 species of tropical trees and shrubs, mostly with a milky juice.

The sapodilla is a stately evergreen tree, up to 60 feet high with a dense rounded crown. The leathery, oblongish leaves, which are 4 to 6 inches long and without marginal teeth, are clustered at the ends of the branches. The plant does not drop its leaves during the dry season which makes it desirable as a shade tree. Small, white, perfect flowers are borne singly in the axils of the leaves.

The fruit of the sapodilla is esteemed by people of Tropical America and many northern people consider it one of the best of tropical fruits even though the fruit doesn't look or feel inviting. The fruit is round or oval, up to 3 inches in diameter, and the color of an Irish potato. The skin is usually rough and scurfy but may be smooth. When ripe, the soft flesh is yellowish-brown, granular, sweet and pearlike. From 1 to 12 hard, black, shiny seeds are imbedded in the pulp. The seeds often have a small barb and should not be swallowed. Fruit



is eaten raw or may be made into syrup and preserves. Sapodillas should be picked before completely ripe since the bats, birds, and pests enjoy them also. If picked when mature but still hard, they may be stored in a cool, dark place where they will ripen.

The most valuable product of the tree is its gum. The bark of sapodilla contains a latex, 20 to 25 percent of which consists of a gutta-percha-like gum known as chicle which is the basis of the chewing gum industry. Native collectors, or chicleros, cut zigzag gashes the full length of the trunk with machetes. The latex runs to the base of the tree where it is collected in rubberized bags. The flow lasts for several hours and the yield may be as much as 60 quarts. The trees are tapped during the rainy season, from July to February. To prevent death of the trees, they are tapped only once every 2 or 3 years. After sufficient latex is

secured, it is cooked in large cauldrons over an open fire. When it becomes viscous, it is removed from the fire, kneaded with a stick and then molded by hand into blocks for export. The United States is the chewing gum nation and uses most of the output of chicle. The demand for chicle has grown to such an extent that it is no longer possible for one species of tree to supply all the needs. Other members of the *Sapotaceae* as well as representatives of other families (the *Moraceae* and *Euphorbiaceae*) are called upon.

The tree furnishes hard, reddish, fine grained, durable wood valued for construction and carving. The wood has

been found in excellent preservation in Mayan ruins.

This versatile tree is one of interest in the Boettcher Memorial Conservatory, especially a favorite of the children who call it the chewing gum tree.

REFERENCES

Bailey, L.H. *The Standard Cyclopedia of Horticulture*. New York: The Macmillan Company, 1935  
Hill, Albert F. *Economic Botany*. New York: McGraw-Hill Book Company, Inc., 1937  
Stanford, Ernest Elwood, Ph.D. *Economic Plants*. New York: D. Appleton-Century Company, Inc., 1934  
Taylor, Norman. *Encyclopedia of Gardening*. Boston: Houghton Mifflin Company, 1961

# Flowers for Container Gardening

Dale Boyle

C.S.U. Extension Agent, Jefferson Co.

Growing plants in containers is a great way to spruce up a porch, patio, deck, balcony, entryway, or courtyard. It is rapidly becoming a popular means of accenting your home. Many kinds of flowering plants may be successfully grown outdoors in above ground containers.

Annual flowers are perhaps the most commonly grown plants in containers, but many perennials, vines, ground covers, vegetables, fruits, and even trees and shrubs are capable of being grown in containers. The reason for annuals being the most popular is that they are the easiest to grow.

Most hardy plants will tolerate the cold winter temperatures, but run into difficulty with our rapid and extreme fluctuations in temperature. An additional problem occurs with the soil drying out much quicker in an above ground container. If you place the containers in a protected place during the winter (out of the wind and sun) and remember to water them should the soil dry, you can successfully over-winter the

perennial plants.

Now that you know what problems are associated with growing plants in containers, let's have at it. Containers for growing plants are limitless. You can use almost anything your imagination will allow. I always prefer to use those that allow for drainage of excess water out the sides or bottom. The soil you put in the container is just as important as the plants you select. Potting soil may be used or you may mix up your own concoction using equal parts of garden soil, peat, or similar material, and sand. The organic matter is especially important to prevent excessive drying in the hot summer months.

Annuals that may be used in containers are:

- |           |                    |
|-----------|--------------------|
| Browallia | Schizanthus        |
| Impatiens | Nicotiana          |
| Lobelia   | Nasturtium         |
| Geranium  | Begonia (Tuberous) |
| Petunia   | Coleus             |
| Primrose  | Sweet Peas         |
| Celosia   |                    |

# Cacti as House Plants

Jack Holland

A noted writer on gardening once said, "There is no such thing as a 'house plant'; some just survive inside better than others." This is doubly true regarding cacti, but enough do well inside so that it would be impossible in one article to list them all. We will, as far as I am concerned, stick to the old stand-bys, with an exotic variety slipped in now and then.

One of the best known of the house cacti is the so-called Christmas cactus. There are two genera, *Schlumbergera* Lem. and *Zygocactus* K. Schum. that are included in this general classification, and it is of no importance to most people which is which. They both require the same culture. Some of this group bloom near Thanksgiving, some at Christmas-tide, and some bloom even around Easter.



*Lobivia potosina*

The flowers are normally of the "trumpet-in-a-trumpet" type and range in color from vivid red through all shades of pink to white. Virtually all have reflexed petals, and all are very beautiful.

*Rhipsalis* Gaertn., known as rice cactus or mistletoe cactus, well grown in a hanging pot is about as beautiful when not in bloom as when it is. Although the individual flowers lack the beauty of those of some cacti, their large numbers offset this small fault. Incidentally, two or three species of *Rhipsalis* are the only cacti found as natives outside the Western Hemisphere, probably evolved from seeds carried across the sea by birds. These and the following genus are not readily available everywhere, but are well worth the effort to procure them.

*Rhipsalidopsis rosea* Britton & Rose is a monotypic genus which has no common name. It is my favorite of this type, with its profusion of rosy-pink flowers. From a botanical viewpoint, it comes between the preceding subjects.

The orchid cacti (*Phyllocactus* Link) all have exquisitely beautiful blossoms that may measure 7 or 8 inches across. The color range is fantastic; some are even bicolors. A well grown specimen in bloom is a long remembered sight. Although the majority are nocturnal bloomers, some are diurnal. All the above are epiphytic and should have rather rich soil and partial shade for best results. The soil should be kept slightly moist, never wet, and in our arid atmosphere an occasional misting with a vaporizer is very beneficial, especially so if foliar feeding is including in the misting.



*Hylocereus* B. & R. 'Wood Cereus' and the *Selenicereus* B. & R. 'Moon Cereus' are among the finest of the climbing sorts of cacti. In fact, the latter is conceded to be the genus with the finest and largest flowers. *Selenicereus grandiflorus* B. & R. 'Queen of the Night' has so powerful a perfume that it is objectionable to many people, while on the other hand *S. pteranthus* B. & R. 'Princess of the Night' is practically scentless. Both genera are night-flowering, opening during the night and closing with the morning. These are not true epiphytes; although deriving some of their sustenance from nutrients collected in the rough bark of trees, they maintain a good ground-root system. Both of these have amazingly large flowers but under house conditions are a bit shy about blooming.

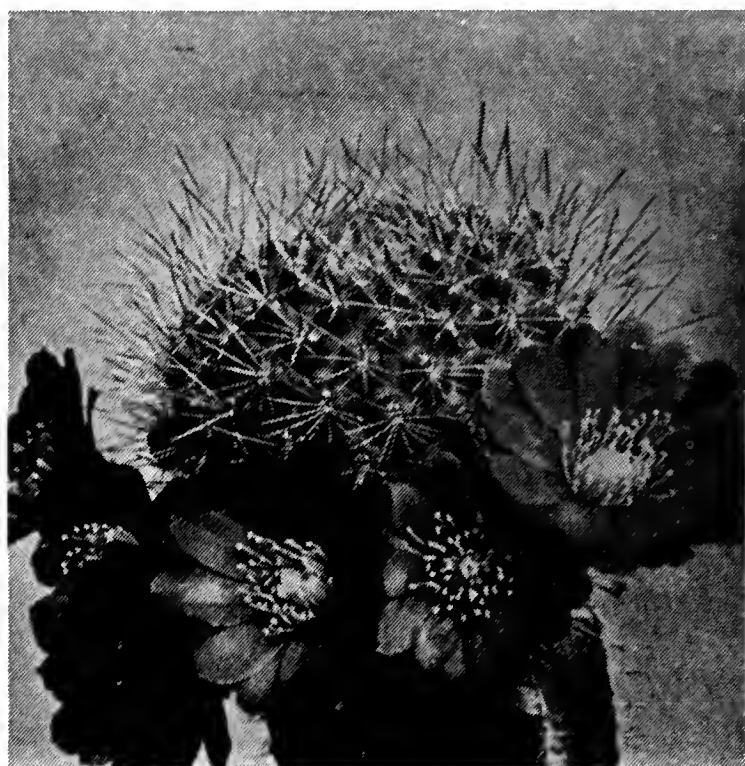
Probably we should next consider the so-called Easter lily cactus. These are, as offered to the trade, mostly hybrids and their number is legion. For the most part they are diurnal bloomers, very showy, and of easy cultivation. Two allied genera are *Rebutia* Schumann and *Lobivia* Hook. Normally smaller plants than the preceding, they have smaller but spectacular flowers. Both are among the most adaptable to the average home conditions, requiring a minimum of care.

The moon cactus featured at many supermarkets is really one type of cactus, *Gymnocalycium* Pfeiff. or *Chamaecereus* B. & R. grafted to more vigorous stock. This grafting is sometimes done with other species to promote more lively growth and better blooms.

Several kinds of the smaller globular or columnar cacti do well in our dry, overheated homes. Even if they do not produce an abundance of flowers, they are intriguingly interesting plants. Some, like *Mammillaria elongata* DC 'Golden Stars', *M. bombycina* Quehl. 'Silk Pincushion', *M. candida* Scheidw. 'Snowball' and *M. herrerae* Fric. 'Golf Ball' are grown principally for their exquisite spine

arrangement. The old man cacti have a rather woolly look due to the hairlike spines (*cephalium*) that cover them. Perhaps the best known of these is the old man of Mexico (*Cephalocereus senilis* Pfeiff.); the Mexican old lady is *Mammillaria hahniana* Werderm., a fitting mate. There are other genera that fit into this group, even one *Opuntia* Miller, *O. flocosa* Salm.-Duck.

Speaking of *Opuntias*, we are all familiar with our prickly pears and our native tree cactus. Well, there are several species that have a definite place among



*Rebutia pseudodeminuta*

the house plants. Some cacti have common names that are fairly descriptive, like beaver-tail, angel wing, boxing gloves, paper-spine, mules ears, cows tongue, devils cane. We must not forget Josephs coat; this has its green joints (pads) mottled with white and pink — perhaps marbled would be more descriptive. Most of the *Opuntias* have yellow flowers, but a few have rosy pink blossoms. While our native *Opuntias* have beautiful flowers, they are definitely not for the house. First, they become too large too soon (except for a couple of species), and second, they are adapted to our cold winters and seem to need a period of cold to produce a good floral display.



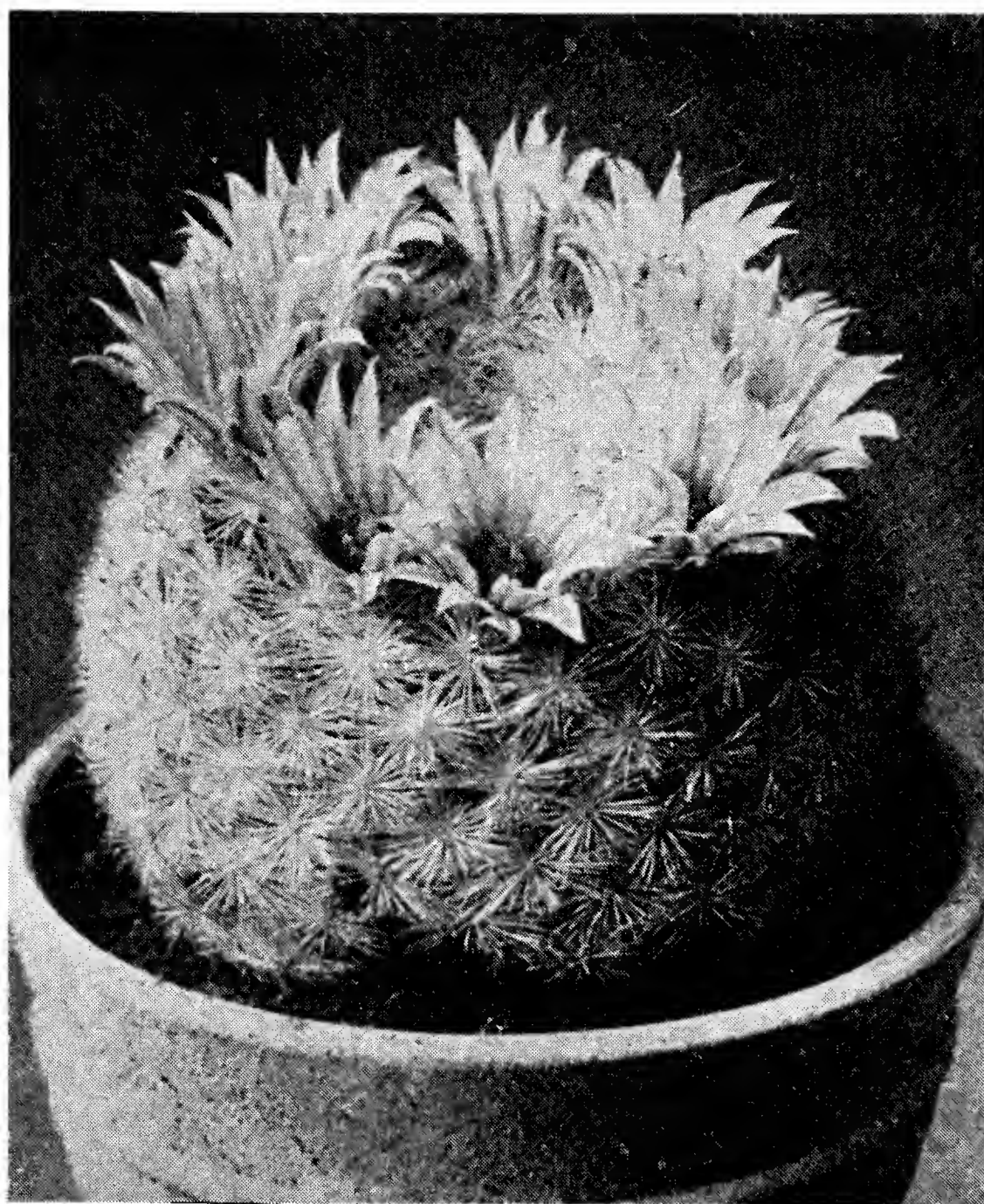
For a prolific floral display some of the small globular cacti are hard to beat. *Rebutia* Schumann, *Gymnocalycium* Pfeiff., *Perodia* A. Berger, *Lobivia* Hook., and *Notocactus* A. Berger are well worth your consideration.

I have purposely avoided mentioning some of the larger cacti such as the barrel cactus, organ-pipe, and other larger specimens because the average home doesn't have room for them. Even in a conservatory they are not reliable bloomers.

While many kinds of cacti may be purchased at the supermarkets or dime stores, very often they are of an inferior quality, and quite frequently, if they have a name tag at all, little credence can be placed on it. It is far better to

buy plants from a reliable cactus nursery. Although the price per unit may be slightly higher, you usually get a lot more for your money.

One thing every novice "cactonaut" should do is to affiliate with an organization devoted to cacti. You get a chance to exchange views and learn from members with, in some cases, years of experience. The only such club in Colorado with which I am familiar is the Colorado Cactophiles. I do not know who the officials are at present, but I'm sure a call to Botanic Gardens House would provide that information. They used to meet once a month, and occasionally go on field trips during the summer. I hope that they still do.



*Mammillaria candida*

# THE HERB GARDEN

Gloria Falkenberg

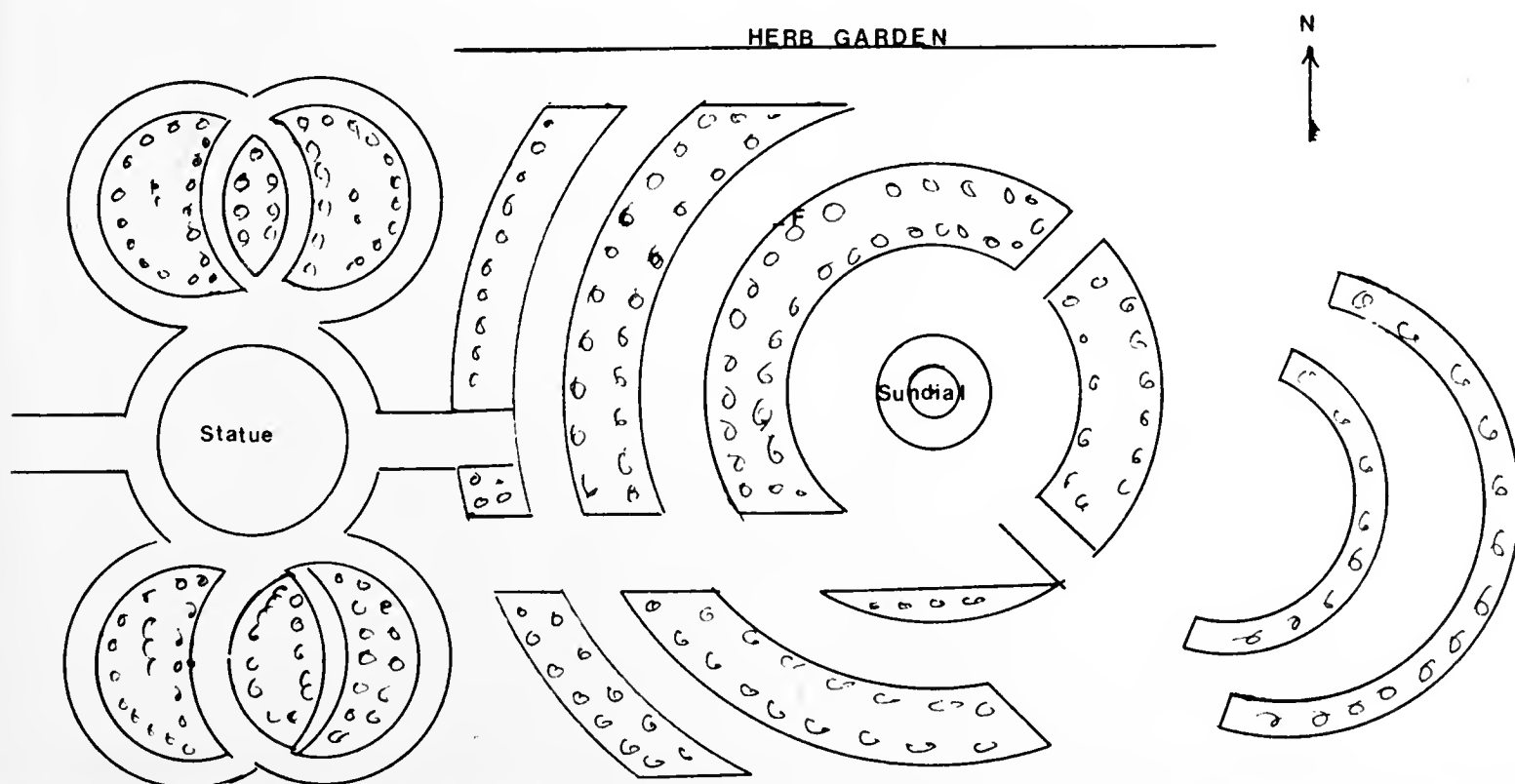
What is an Herb Garden? For many it is a garden of joy and delight filled with fragrances and flavors. To the Denver Botanic Gardens Guild it is a garden of use and delight, the result of many years of effort, work, joy, calendars, vinegars and garden tours. The completion is almost in sight.

The original Herb Garden was formally dedicated in July, 1966. This Herb Garden was designed by Mrs. Persis McMurtrie Owen. The formal plan with the brick paths of interlocking circles forming a traditional bow-knot design was completed in 1965. The charming appearance of the garden was further enhanced by the center statue of "The Boy and A Frog." This statue was given to Denver Botanic Gardens for the Herb Garden by Louisa Ward Arps in memory of her aunt, the late Elsie Ward Hering, the sculptress.

In April 1972, the Executive Board of Denver Botanic Gardens unanimously approved an extension of the Herb

Garden. Jane Silverstein Ries designed the plan which included a lovely red brick circular path opening into the original garden with an arbor of cedar to the west and south. Buff concrete benches on an outer curve of the path face west with others under the arbor donated by Denver Botanic Gardens in the memory of Mrs. Margaret McLister. Mrs. McLister was a staunch and devoted supporter not only of the Denver Botanic Gardens and the Guild, but also the Herb Garden itself. A focal point of the Garden is a raised red sand stone sundial in the memory of Mrs. Persis McMurtrie Owen, designer of the original garden. A small gazebo is yet to be constructed.

The herbs are of a wide variety and include culinary, dye plants, medicinal, and fragrant herbs plus plants for division for the Annual Plant Sale. The herbs are also used to make the various flavored vinegars. Guild members prepare, bottle and sell the vinegar at



the Annual Christmas Sale and through the Gift Shop. They have found to their delight that the demand is still growing — 144 bottles were sold in 1965; 1800 bottles were prepared in the fall of 1975 and completely sold out by mid December. In addition to the vinegar money additional money was realized through the July Annual Gardens Tours. These two sources of income have made it possible for the Denver Botanic Gardens Guild to be financially responsible for the construction of the herb gardens.

An exciting planting of trees, Leville hawthorn, red horsechestnut, serviceberry and a linden have been added this spring while many new herbs have been added to the special beds for dye plants and the fragrant, culinary, and medicinal

herbs. With the advent of a sprinkler system the plantings will soon become established, providing excellent opportunities for propagation and division for the Plant Sale plus educational opportunities for the Denver Botanic Gardens visitors.

The Herb Gardens are maintained by the Guild members and one can see these young women planting, watering, and weeding throughout the spring, summer and fall.

With the outstanding cooperation of Denver Botanic Gardens and the devoted efforts of the Guild members and many supporters, this is a successful project. This lovely Herb Garden forms an additional point of interest for the members and visitors to Denver Botanic Gardens.

## Alpine Anemone

Plants of the genus *Anemone* L. have no petals but their sepals are petal-like in appearance. There are many stamens and pistils. Always present in this genus are leafy collars, called involucre, which are folded around the flower bud and which later encircle the stalk below the flower. Most of the species have their leaves dissected into narrow segments.

The Alpine anemone, *Anemone narcissiflora* L. (*A. zephyra* A. Nels.), usually has 3 or more white flowers on stalks 2 to 4 inches long which all rise from the involucre. All the leaves are finely dissected and more or less hairy, and the ripened achenes are flattened and black. This species is usually found above timberline in the tundra but may occasionally be seen in sub-alpine meadows. It grows in the Alps in Europe and from Alaska south along the Rockies to Central Colorado. (Adapted from *Handbook of Rocky Mountain Plants* by Ruth Ashton Nelson.)

Marjorie L. Shepherd

This is not a rare plant in Colorado but one of our loveliest. It often grows close to Globeflower (*Trollius laxus salisb.* var. *albiflorus* A. Gray), to which it is somewhat similar. It may be seen on Trail Ridge Road, Loveland Pass, and, if you are a hiker, on Buckskin Pass just below the summit, flourishing in the flower-decked meadows sloping down to Snowmass Lake.

We can see and enjoy this anemone in Colorado, but it may also be seen in many parts of the world. Reginald Farrer, in *My Rock Garden*, talks about growing it in England, and it is probably the form from the Alps which is pink or pinkish. E. H. M. Cox in *Farrer's Last Journey* tells of finding pink and yellow specimens with no apparent botanical difference from the white ones along a trip north through Burma to the high Himalayas.

Most picturesque of all descriptions of the Alpine anemone is from *On the Eaves of the World*, a book about plant collecting in China, by Reginald Farrer: "Higher we went and higher, approaching now to the spikes and pinnacles of alpine coppice that from Siku had looked quite magnificent, bristling on the face of the sloping fell, but now revealed themselves as powerful peaks and precipices with deep, steep grass gullies ramifying downward between them. On the shadier aspects of the points and aretes, a large rhododendron was growing low and stunted, with globes of white blossoms that often made a dappled effect when one looked at the snowballed heights, and on a cliff far up I saw at length the uniform shimmering effect of whiteness that at first I took for some strange vagary of the sunlight playing on a bed of rippling, glossy leaves, but when I got near I was aware with awe of a wide drift of magnificent, fluffy anemones flapping their heads of big white blossoms from an impregnable ledge. More appeared higher up and more and more. Every ledge that one could not get at was soon completely occupied by bending mats of this snowy beauty. And it was an old friend, too, though an old friend transformed and hardly recognizable in what must be surely the most noble of its many avatars, for this is the one alpine plant of general fame and importance in our gardens which is found in an unbroken chain of distribution right across the world from the far west of the Pyrenees to the farthest northeast corner of Tibet."

If you wish to see the alpine anemone for yourself, take a trip over Loveland Pass early in July. Stop at the little lake just below the summit of the pass, park your car and walk north along the lake. Where the meadow begins to rise, search and the anemones should be there. Having admired them,

look around on the little wet hummocks near by and you should find another high altitude lovely — bog kalmia or bog laurel (*Kalmia polifolia* Wang.) a small edition of the eastern mountain laurel. This voyage of exploration involves very little walking, and the cool mountain air makes it a pleasant stop during a drive into the mountains.

#### REFERENCES

- Cox, E. H. M. *Farrer's Last Journey*. London: Dulau & Co. Ltd., 1926  
 Farrer, Reginald. *My Rock Garden*. London: Edw. Arnold & Co., 1907.  
 Farrer, Reginald. *On the Eaves of the World*. London: Edw. Arnold & Co., 1926.  
 Fiemwell, G. *Alpine Flowers and Gardens*. London: A. & C. Black, 1910.  
 Nelson, Ruth Ashton. *Handbook of Rocky Mountain Plants*. Tucson, Arizona: Dale Stuart King, 1969.  
 Weber, William A. *Rocky Mountain Plants*. Boulder, Colo.: Colorado Associated University Press, 1972.



*Kalmia polifolia*



## LOOKS AT BOOKS

**Wild Flower Name Tales**, by Berta Anderson, Century One Press, Colorado Springs, Colorado, 1976. 124 pp. \$6.95

A new book of interest to both plant and history enthusiasts is Berta Anderson's *Wild Flower Name Tales*. If one has both interests it is a double blessing. The author and her husband, Bill Anderson, who took the fine flower photographs which illustrate the little volume, have hiked the trails and visited all the special wild flower haunts in the Front Range of the Rockies and other areas as well, accumulating data and photographs of Colorado mountain flowers.

In the effort to identify all the many kinds they found, Berta became interested in the system of plant naming used by botanists. This is to many nature lovers both confusing and frustrating, but with diligence and persistence in research she came to understand its intricacies. Her first chapter, *All Wild Flowers Have Names*, explains in simple language many of the technical details of the plant naming process. Her purpose here is to present this information to amateurs in palatable doses. Have you ever wondered why some Rocky Mountain flower names are coupled with the personal names of Parry, James or Gray? The "Name Tales" will give you answers and also some information on the history and geography of Colorado.

Such famous explorers as John Charles Fremont, Ferdinand V. Hayden and John Wesley Powell and 19th Century botanists, including Thomas Nuttall and Asa Gray, were given "Everlasting Remembrance" by industrious botanists who were laboring to find names for the wealth of previously unknown plants of our prairies and mountains.

The book includes pictures of some early explorers and of naturalists mentioned as well as excellent photographs of the plants themselves, some in color.

The text is easily read and is well documented. Perhaps in view of the emphasis put on the naming process, it would have been worthwhile to have included the authorities for the botanical names of plants mentioned. But these can of course be learned if desired by the reader from references to the technical works cited.

An appendix containing "Suggestions for the Pronunciation of Botanical Latin" will be appreciated by many amateurs. There is a map on the inside back cover which indicates the location of many sites mentioned in the text. The book will be valuable to all plant lovers, amateur botanists and gardeners included. And I think hikers will be found carrying it in their knapsacks.

**Ruth A. Nelson**





# DENVER BOTANIC GARDENS, INC.

A Non-profit Organization

## OFFICERS

Mr. John C. Mitchell	President
Mr. Edward T. Connors	Vice-President
Mr. Richard A. Kirk	Vice-President
Mrs. James J. Waring	Vice-President
Dr. Moras L. Shubert	Secretary
Mrs. Frank B. Freyer, II	Assistant Secretary
Mr. Alexander L. Kirkpatrick	Treasurer

## STAFF

Dr. William G. Gambill, Jr.	Director
Mr. Glenn Park	Assistant Director
Mr. Andrew Pierce	Conservatory Superintendent
Ms. Beverly M. Nilsen	Botanist-Horticulturist
Mr. Dudley H. Schwade	Botanist-Horticulturist
Miss Margaret Sikes	Education Director
Ms. Solange Gignac	Librarian
Miss Lucy Crissey	Honorary Librarian
Dr. D. H. Mitchel	Honorary Curator of Mycology
Mrs. J. V. Petersen	Honorary Editor of The Green Thumb
Dr. Helen Zeiner	Honorary Curator of the Kathryn Kalmbach Herbarium

## ILLUSTRATION SOURCES

Front cover and pages 41, 42, 49, 63 — Photos and Drawing Pg. 61 by Bill Anderson  
Back cover — Photo, Botanic Gardens file.  
Page 35 — Photo courtesy Denver Public Library, Western History Department  
Page 37 — Drawing by Julia Andrews-Jones  
Page 46 — Photo, courtesy George J. Balls, Inc.  
Pages 47, 50, 51, 52, 53, 54 — Drawings by Pauline Roberts Steele  
Pages 55, 64 — Drawings from Green Thumb File  
Page 56 — Drawing by Phil Hayward  
Pages 58, 59, 60 — Photos courtesy Macmillan Co.

# *The Green Thumb*

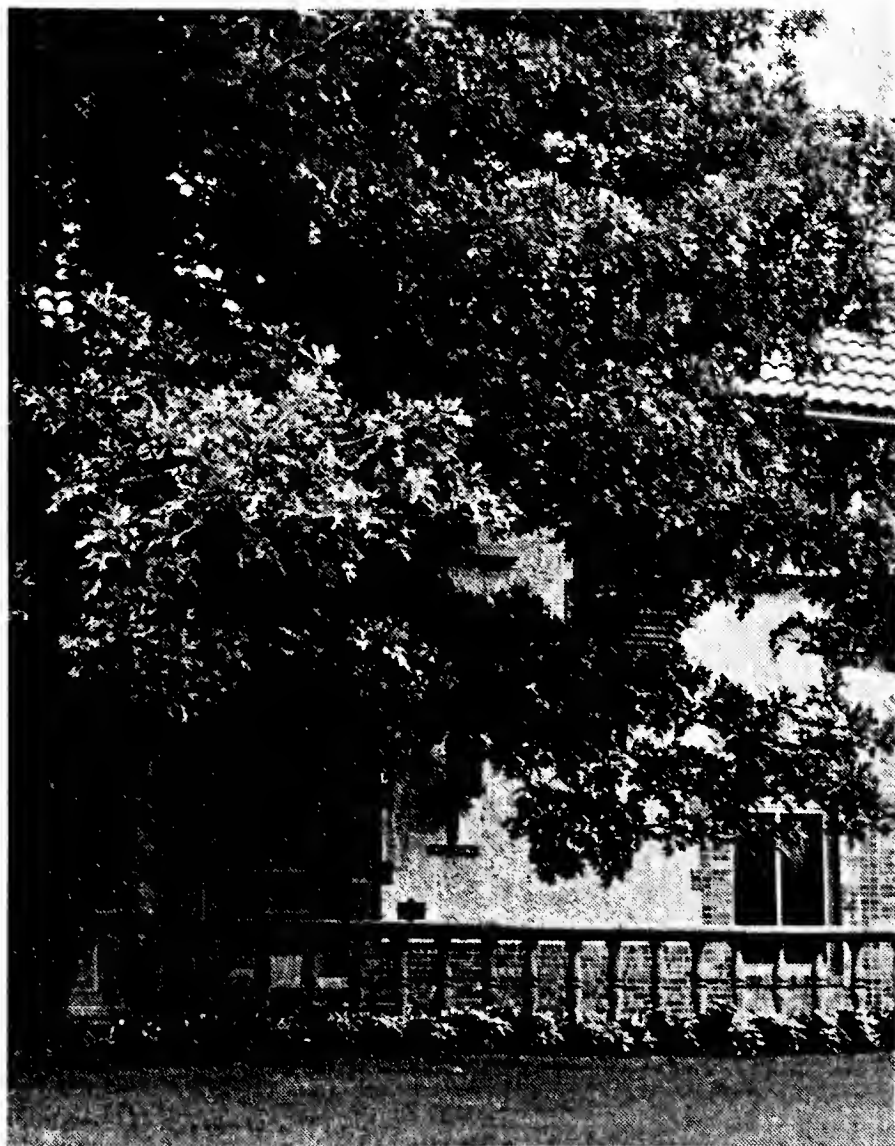
**DENVER BOTANIC GARDENS  
909 YORK STREET  
DENVER, COLORADO 80206**

**NON-PROFIT  
ORG.**

**U.S. POSTAGE**

**PAID**

**Permit No. 205  
Denver, Colorado**



**Botanic Gardens House**

**DO NOT FOLD**

**ADDRESS CORRECTION  
REQUESTED RETURN  
POSTAGE GUARANTEED**

**DENVER BOTANIC GARDENS  
DENVER, COLORADO**

**This is a non-profit  
organization supported by  
municipal and private funds.**

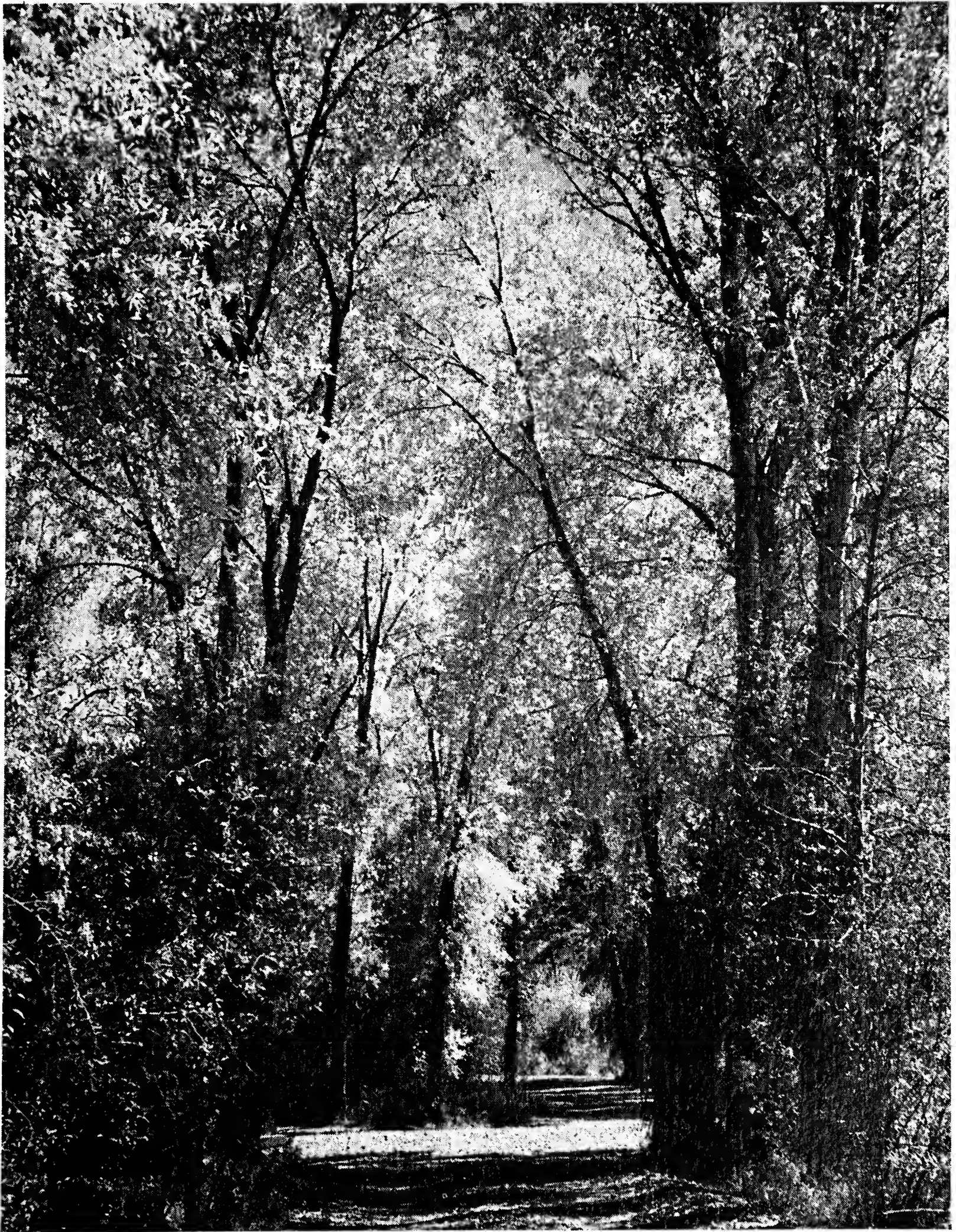
**Denver Botanic Gardens maintains a collection of living plants, both native and exotic, for the purpose of acquiring, advancing and spreading botanical and horticultural knowledge.**



# *The Green Thumb*

VOL. THIRTY-THREE, NUMBER THREE

AUTUMN, 1976



## THE COVER

Fall Cottonwoods

*Populus angustifolia* James

## THE GREEN THUMB

AUTUMN, 1976

### VOL. THIRTY-THREE, NUMBER THREE

#### *Editorial Committee*

Mrs. Gilberta T. Anderson  
Dr. William H. Anderson, Jr.  
Mrs. D. A. Andrews-Jones  
Mrs. Suzanne Ash  
Mrs. Paul A. Bloustein  
Mrs. William H. Crisp  
Dr. William G. Gambill, Jr.  
Mrs. George H. Garrey  
Mrs. Phil Hayward  
Ms. Solange Gignac  
Mrs. Robert M. Kosanke  
Mrs. J. V. Petersen, *Chairman*  
Dr. Moras L. Shubert  
Miss Margaret Sikes  
Pauline Roberts Steele  
Dr. Janet L. Wingate  
Dr. Helen Marsh Zeiner

Published by **Denver Botanic Gardens, 909 York Street, Denver, Colorado 80206.**

Sent free to all members of the organization. Junior membership \$3.00, Regular \$10.00, Participating \$30.00, Contributing \$50.00, Supporting \$100.00, Corporation \$200.00, Patron \$500.00, Life (single contribution) \$1,000.

By becoming a member of Denver Botanic Gardens you will receive *The Green Thumb* and the monthly *NEWSLETTER*. You will also have unlimited access to the use of the books in the Helen K. Fowler Library, located in Boettcher Memorial Center at 1005 York Street.

For further information write to Membership Chairman, Botanic Gardens House, 909 York Street, Denver, Colorado 80206, or call 297-2547.

Copyright 1976 by Denver Botanic Gardens, Inc.

# The Green Thumb

Copyright 1976

William H. Anderson, Jr. Ed.D.

Gilberta T. Anderson

Editors

AUTUMN 1976

## Colorado's Horticultural Pioneers

*Bernice E. Petersen* . . . . . 66

## British Garden Tour

*Josephine Robertson* . . . . . 76

## Exotics of Colorado

*Helen Marsh Zeiner* . . . . . 80

## Cemetery to Conservatory

*Louisa Ward Arps* . . . . . 82

## Autumnal Splendor

*William G. Gambill, Jr., Ph.D.* . . . . . 89

## The Clements in Colorado

*Moras L. Shubert, Ph.D.* . . . . . 96

## Focus on *Coccoloba uvifera*

*Peg Hayward* . . . . . 100

## Centennial Tree Watching

*E. Alan Rollinger* . . . . . 102

## Colorado Authors Honored

*Solange Gignac* . . . . . 104





# COLORADO'S

## HORTICULTURAL

## PIONEERS

**Bernice E. Petersen**

Early settlers in our state soon recognized that "agriculture in Colorado is an entirely different pursuit from what it is in the eastern states . . . It is better to abandon all notions and begin anew. Dependent upon irrigation for the growth of his crops he (the farmer) must study the methods and meet the requirements of the climate . . . Irrigation is dreaded because it is not understood . . . The land that lies where water can overrun it and permeate it is valuable." Such was the advice given in 1883 by William E. Pabor, secretary of the state's first horticultural society.

Vegetation that existed around Denver previous to the coming of the white settlers was mainly grasses such as buffalo and grama with yucca, cactus, and sagebrush. The only trees were found along the streams. During the moist spring season many flowering herbs appeared for a short time but died down as the warmer summer approached.

From 1858 to 1872 the domestic water supply came from wells. During this time there were few trees and no lawns. A ditch for irrigation had been started in 1865 from a point 12 miles up the Platte. In 1883 artesian water was discovered and many wells were sunk. In 1884 the Denver Union Water Company put in filters for purifying the water and galleries were constructed under the Platte River to collect the underflow. According to Katharine Bruderlin Crisp water was the determining factor in the development of the trees of Denver.

In 1880 a Horticultural Society was founded and the subject chosen for the first meeting was irrigation, which shows how vital it was to every member.

According to reports the first trees were planted in Denver in 1864 by Thomas D. Worrell at 18th and Stout Streets and in April 1867 it was reported a wagonload of cottonwood trees arrived. The first nursery businesses were begun about 1870. J. W. Cook of Ralston Creek brought a wagonload of fruit and berry stock from Illinois. He planted some on his farm and sold part to his neighbors. That same year Henry Lee

brought 15,000 plants from Iowa and sold most to his neighbors in Wheat Ridge. Some of these trees were still alive in 1902. Wilson Perrin is credited with the first commercial nursery in 1869 or 70 at what is now Lakeside Park.

With the availability of water tree planting began in earnest. In 1871 Mrs. Sarah Brown brought acorns and seedling bur oaks from Kansas and planted them near Littleton. A couple of years later James Richard planted two rows of black walnut trees, 35 in all, along a street in Edgewater. According to information garnered by Mrs. Crisp these trees were grown from nuts. Many of the black walnut trees common in Denver in 1934 had been grown from seeds from these first trees.

Elsewhere, about 1865 Jesse Frazier of Florence brought a wagonload of fruit stock from Missouri to plant on his farm. By 1879 J. S. Flory of Longmont reported, "If the most skeptical could see my orchard they would conclude that apples, pears and peaches can be successfully raised in Northern Colorado . . . The early Richmond cherry bears abundantly. As to grapes, every vine is loaded . . . 'It is as easy to raise grapes as squashes, when you know how.' What kills three-fourths of the trees is the warm winters, in which the hot rays of the sun beat upon the south-west side of the trunk of the tree, heating it and starting the sap; then at night a severe frost coming, the tree is ruined."

Anson Rudd of Canon City first planted in 1864 with little success but in 1883 his orchard of "200 trees provides apples, pears, peaches, quinces and grapes." Also in 1883 Mr. Pabor reported "Hundreds of acres in the immediate vicinity of Denver are in grapes, currants, gooseberries, raspberries, blackberries and strawberries. The profits are enormous, especially from strawberries."

Farmers as well as gold seekers were among the colorful, vigorous settlers of our state. William N. Byers was born on a farm in Ohio in 1831. He travelled as a surveyor "seeing the country" and arrived in Denver by wagon train in 1859 "with his shirt-tail full of type to found *The Rocky Mountain News*." From the beginning he championed the cause of agriculture. Olive Hensley reported, "He got himself a farm in the Valverde district of Denver and grew melons in variety, vegetables of all kinds and in August of 1860 *The News* office was a veritable exposition in itself." The following year he urged formation of an Agricultural Society which came into being in 1863. Ten years later Mr. Byers attended an Agricultural Congress in Indianapolis along with delegates from 24 states.

In the course of his lifetime Mr. Byers planted many kinds of trees. In fact 35 kinds were planted around his home and some of these are now preserved on the grounds of Byers Junior High School. They were chestnut, butternut, bur oak, Russian apricot, Norway maple, sugar maple, mulberry, and wild black cherry which he felt was unsuited to city planting because it was "too attractive to the boys."

The 1875 *Denver City Directory* reveals that four nurseries were operating but in 1876 only one listing showed the Platte Valley Nurseries at Larimer and the Platte River with Louis Pierson, proprietor.

George Braun operated one of the earliest nurseries in this area which was first listed in the directory in 1882 as Russell and Braun. In 1890 he had the Curtis Park Floral Gardens at University and First Avenue. Some recall that this property was later sold to Tolleson Nurseries and finally became part of the Denver Country Club. When S. R. DeBoer arrived in Denver in 1909 his first job was grafting roses for Mr. Braun at that location. Mr. Braun was pictured with many other horticultural pioneers in 1912.

Hiram G. Wolff was another important tree man who maintained a nursery in Denver in 1887. Mrs. Crisp records a conversation with his wife: "Mr. Wolff experimented successfully with the first apple trees, which he brought by ox team to his ranch on Clear Creek. He later entered the nursery business and experimented with other trees. For many years a butternut, a chestnut, a sycamore maple, a linden and several black walnut trees were among the interesting trees on the 'north side' of Denver . . . Mr. Wolff believed that practically any kind of tree could be grown in Denver under proper care."

Other Denver citizens whose names are associated with early tree planting are Governor Routt, Governor Grant, "Brick" Pomeroy, Thomas Patterson, John McDonough, Mrs. Henry W. Warren, and Mrs. Francis Gallup. According to Mrs. Crisp, "Denver owes a great deal to those early citizens who persisted in planting many kinds of trees in spite of the popular belief that nothing but cottonwoods, boxelders, soft maples and possibly elms could survive."

### Wilmore Nurseries

In 1878, five years after arrival from Maryland, the Wilmore family settled along the main highway between Denver and Leadville. Miners' supplies were carried then by wagon or pack animals, and most of the fruits and vegetables grown by the Wilmores were sold to passersby. In fact the Leadville Stage stopped regularly and the driver was a principal customer.

As a youngster William enjoyed growing flowers in the front yard and in 1883, when he took over the vegetable wagon, he added cut flowers for marketing. His bouquets sold readily at good profit and he was among the first to peddle flowers in the city of Denver.

The following year he bought land at the corner of Wadsworth Avenue and Prospect (now West 38th Avenue) and "turned professional" in 1886; flowers were his sole enterprise. Despite the panic of 1893 he staged a prize-winning dahlia exhibit at the World's Fair and published a 4-page dahlia catalog, probably the first devoted exclusively to dahlias in the United States. Earlier his stock had been sold on handwritten descriptions. In 1894 money was tight and he had to wait until his first orders came to send out remaining catalogs. To his amazement, in 1907, his book "The Dahlia Manual" sold 1500 copies in the first edition and 2,000 in the second.

Since W. W. Wilmore's chief love was dahlias the firm operated almost exclusively as a dahlia nursery and farm until shortly after World War I. During that time Mr. Wilmore achieved recognition as one of the nation's outstanding dahlia hybridizers; he originated over 600 new varieties.

Following the war two of his sons, Charles and Scott, helped him expand the list into a complete line of landscaping plant material. A partnership between the two sons was dissolved in 1932, and from that date the nursery has been owned and operated by Scott and Ruth Wilmore. Recently the firm was sold to their long-time business manager Steven Driftmier and his wife, Abigail. Charles Wilmore and his son, Kenneth, operated Green Bowers Nursery, located for many years at South Colorado Boulevard and East Exposition Avenue.

The Wilmore Nurseries experimented with new varieties of evergreens, trees, shrubs, and roses until today they offer one of the most extensive lists of plant material available in the Rocky Mountain region. Broad-leaved evergreens were of special interest, the firm helped popularize pyracantha, mahonia, and several members



Wilmore Early Catalog

of the euonymus family. It quickly adopted the practice of potting roses and other plants. Gray Gleam, an outstanding scopulorum juniper, was discovered by Scott Wilmore and Robert E. More. Impressed by its color and form Scott patented and introduced it by name about 20 years ago. In 1961 the company boasted 60 seasonal employees including 15 landscape designers.

Descendants of W. W. Wilmore remained supporters of a botanic garden in Denver. Both Scott and Kenneth served as presidents of Colorado Forestry and Horticulture Association. For many years Kenneth has served as a trustee of Denver Botanic Gardens and has been active on its Horticultural Advisory Committee.

Although Wilmore Nurseries can honestly claim it is the oldest in the state, Scott and Charles modestly agree that Northern Nursery was the first to provide a full line of landscaping plant material.

### Northern Nursery

Prior to the Fergusons' arrival in Denver they had been in the nursery business in Erie, Pa. and later in Iowa. Arthur came to Denver in 1892 and Charles and his family joined him a short time later. They bought material wholesale from Shenandoah Nursery and heeled it in on rented land at 2424 Arapahoe. Their sales area extended into Wyoming and northern New Mexico.

Unsold trees and shrubs were lined out near the office and shortly after establishing their business the Fergusons found Colorado grown stock grew better here because most wholesale nurseries dug material in autumn and wintered it in warehouses where some stock often dried out in storage.

(James Ackerman in 1887 suggested fall planting of trees should be abandoned and door-to-door salesmen run out of town. According to George Kelly, "No doubt Mr. Ackerman was a nurseryman, too.")

A Mr. Green had a nursery on land rented near the orphanage on Lowell Boulevard. The Fergusons contracted trees from him. Next Mr. Green bought 10 acres for a nursery at 62nd and Washington Street. After his unexpected death the brothers bought that tract and each individually bought 10 additional acres adjacent. About 1920 Arthur died suddenly. Charles had travelled as Northern's representative but within a year he died. His son, Carlisle, a graduate of the University of Michigan Law School, had helped at their nursery during his growing up years. Reluctantly he gave up his law practice to maintain the business. Soon Steven James joined him as foreman and remained to become a partner in 1949.

Carl Ferguson, in a taped interview for the state historical society, credited landscape architects, especially S. R. DeBoer and Arthur Carhart, with assisting his nursery salesmen during those early years. Previously a typical home planting consisted of a snowball bush on one side of the front walk, a lilac on the other. A couple of soft maples or elms were also in front with two or three fruit trees lined up on either side of the house. A honeysuckle bush usually hid the ashpit.

Although most new planting materials were discovered through trial and error, with the help of experts Northern found *Pyracantha coccinea* Roem. var. *wyatti* was hardier but not as graceful as *P. lalandi* Dipp. Many reliable nurseries lamented the truckloads of arborvitae shipped from Oklahoma and Texas to be unloaded on unsuspecting young homeowners. In self-defense Northern found an arborvitae from a wholesaler in Kansas City that was adaptable to Colorado's climate. *Azalea mollis* Blumme was also hardy here. Two upright junipers, Northern Beauty and Northern Green, had been selected from many grown by Mr. James at his home. Those cuttings were grafted by a midwest nursery and featured by Northern. Although neither juniper was ever patented Mr. Ferguson admitted a friendly rivalry with Wilmore Nurseries concerning relative merits of his favorites contrasted with Gray Gleam.

The nursery handled a selection of fruit trees including pears and sweet cherries which were not reliably hardy but Mr. Ferguson felt if Northern didn't sell them others would, despite warnings about hardiness. A cottonwood, developed from a Wyoming native and similar to one named for D. M. Andrews, was another favorite at Northern. After growing both cottonwoods in trial rows and inviting Mr. Andrews' comparison, Northern eventually called its cottonwood Andrews' Poplar also. This is still sold at the James Nursery at 800 E. 64th Avenue. Since Mr. Ferguson's recent death his daughter, Juanita Morse, has dissolved the corporation. Its planting stock was sold to Nurseries Inc. in Arvada.

## Broadview Acres

Milton and Alta Webber founded Broadview Acres shortly after their marriage in 1899. Sharing an interest in country living and plant life they purchased 10 acres 3 miles northwest of Arvada near Highway 72 and Simms Street. Several old apple trees, a scattering of shrubs and a few peonies stocked the grounds.

There they built a colonial home and framed its entry with four narrow arborvitae of which three remain, a tribute to their optimism. Accustomed to the luxuriant vegetation and hardwood trees found in Illinois and Ohio they planned their nursery plantings to include oak, maples, lindens, hawthorns, sycamores, buckeyes, and even tulip trees. Shrubs included a wide selection of cotoneaster, nine kinds of viburnum, euonymus, lilac, and black cherry. Peonies were their joy and they grew more than 200 varieties.





Arborvitae at Broadview

At Broadview, landscape architects were likely to find unusual trees and shrubs of substantial size. Likely, too, was Mr. Webber's response, "I'm not sure I want to sell this one to you, I have grown it for 20 years and it is really part of the place."

In October 1949 Broadview Nursery was designated a Colorado Botanic Reserve by Colorado Forestry and Horticultural Association. In her late years Mrs. Webber continued to sell choice peonies, some perennials as well as seedling trees and shrubs.

Doris Evans, who acquired the property in recent years and maintains a small nursery there, continues to treasure the unusual variety of plants in her "woods." She points with pride to unexpected props built of concrete by Mr. Webber to support huge but weakened limbs on some favorite members of his plant family.

### J. D. Long Seed Company

Although many remember his catalogs punctuated with philosophical bits of cultural information, J. D. Long gained national prominence for his contributions to the popularity of iris and gladiolus.

A graduate of Iowa State Teachers College Mr. Long taught for a while before he was lured to Colorado's healthful climate in 1898. He ranched briefly but settled in Boulder in 1901 to help establish Noah's Ark, a novelty store. Almost from the beginning he handled flower and garden seeds. This department continued to grow until he discontinued novelties and changed the store's name to The J. D. Long Seed Company.

In 1915 he purchased 25 acres in north Boulder where he began growing roots and bulbs. He found the climate and soil ideal for production of iris, gladiolus, and peony. He first listed iris in 1915 and purchased many of his earliest ones from France. An active member of the American Iris Society since its beginning, Long's Iris Gardens have gained national fame during the 60 intervening years. No doubt their most famous introductions were Elmo, the 1945 Dykes medal winner developed by Dr. Phillip Loomis of Colorado Springs, and Jake, developed by the Sass Bros., early hybridizers at Omaha, Nebraska.



#### Succinct Advice

At times Mr. Long devoted as many as 14 acres to propagation of gladiolus. Although he didn't hybridize them he had an uncanny judgment in spotting varieties worth introduction. The North American Gladiolus Council honored him. The New England Gladiolus Society recognized him for "continued service to advance horticulture, especially the gladiolus and for original, valuable and progressively up-to-date directions given in readable language with a humor widely known and appreciated." His *Glad Gossip*, published in at least nine editions, accompanied each shipment of "bulbs." This 24-page booklet answered "glad" growers' questions wisely but lightly.

*Long's Short Talks about Small Gardens* was issued to schools, garden clubs, and plant societies when demands as a speaker and judge exceeded his time and strength. *Over the Back Yard Fence*, a 16-page bulletin of horticultural information was published in miniature during World War II as *The Seeder's Digest* (3 x 4 inches). *Weed 'em and Reap* was the lead article and *Irritating the Garden* offered thoughts on irrigation. *Use the Hoe More, Hose Less* recommended cultivating and finally, *Vegetables for Vitamins* offered encouragement to purple-thumbed victory gardeners. "Radish. If you can grow weeds, you can grow radish. Sow April to Sept. Try Crimson Giant."

Mr. Long died in 1948. His son Everett, a former Trustee of Denver Botanic Gardens, and his wife, Anne, continue the business with iris the single product. For many years they were active members of the Editorial Committee and were responsible for special iris issues of *The Green Thumb*.

## Darwin Andrews

Probably our most influential horticultural pioneer was D. M. Andrews who brought international prominence to Colorado's Blue Spruce and Rocky Mountain Columbines.

Born in the backwoods country of Illinois in 1869 Darwin M. Andrews was the son of a plant collector and beekeeper. His mother was interested in botany and taught him as she learned. By the age of 10 he had pressed 100 kinds of plants and could give their botanical names.

Three years after his first formal schooling, at 18 he enrolled at Milton College in Wisconsin where he paid his way by collecting and selling plants. In 1893 he and a classmate, Mary Wheeler, were married in Boulder. Their first seasons there were spent in getting acquainted with new species of mountain and plains plants.

Before long eastern horticulturists learned they could get reliably named Colorado natives, and eventually his Rockmont Nursery was sending seeds or plants throughout the world. Arnold Arboretum in Boston, Kew Gardens in England, the Royal Botanical Garden in Edinburgh, Scotland, the Belgrade Botanical Garden in Servia received plants from him. Correspondents lived in more than 40 countries including Australia, Argentina, Denmark, India, France, Finland, Japan, Russia, and Spain.

His careful work on the native flora resulted in the discovery of many new plants, most of which were described by Professor Aven Nelson of the University of Wyoming; some were named as "everlasting remembrances" by him for Mr. Andrews. Through his introduction of Rocky Mountain plants into cultivation Mr. Andrews met eminent botanists and horticulturists such as Correvon of Switzerland, Sargent of the Arnold Arboretum, and many others who came to Boulder to visit and see his plants.

T. D. A. Cockerell, Professor Emeritus, the University of Colorado wrote: "In the Rocky Mountains we have very many species, suited to different altitudes, temperatures and soils, but on the whole likely to succeed in many places in the Temperate Zone. The probability of success with these plants is greater than those from most other parts of the country. Yet there is nothing which can take the place of the actual experience of the grower . . . Mr. Andrews, during the long period between 1893 and up to 1938 was incessantly collecting, observing, growing his plants and shipping them."

According to his daughter, Mildred Andrews Steele, Mr. Andrews did his first collecting on foot, carrying heavy packs of plants on his back. Besides those for the market there were those to be tested in his embryonic nursery. Seeds and cuttings were planted in abundance on his one acre site at 4th and Arapahoe and with experience he worked out substitute conditions to assist gardeners in far away places. Colorado Blue Spruce, Rocky Mountain Columbine, cacti, ferns, native shrubs, and deciduous trees were sought by horticulturists everywhere.

A pack burrow became a prized possession and enabled him to take more extensive trips. He also used a bicycle, rigged with luggage carrier, for trips to Denver, Golden, and even Colorado Springs. Later he used a horse and light wagon to drive hazardous roads. With the acquisition of a Model-T Ford his plant gathering expeditions extended into southern Wyoming, western Nebraska, New Mexico, southern Colorado and the Western Slope, and even into north Texas.

The Rockmont Nursery finally included 17 acres at 23rd and Bluebell. Here he was able to grow most of the favorite garden perennials as well as an extensive collection of trees and shrubs. Here, too, he could expand into plant selection and breeding.





D. M. Andrews Goes Collecting

He imported all of the hybrid lilacs obtainable from France and succeeded in growing those grafted varieties on their own roots. In all, he introduced 200 varieties of lilacs. Many were given to the University of Colorado, some grow in Lilac Lane, part of Milton Keegan's gift to Denver Botanic Gardens in City Park.

Through judicious crosses and selections he originated many peonies, phlox, and iris which received national acclaim: 'Candlelight' and 'Odaroloc' irises, the hardy phlox 'Snowcap,' 'Osceola,' 'Robin Hood,' 'Silverton' were a few of many, and his peony 'Nimbus' won first at the National Peony Show in 1937. *Potentilla fruticosa farreri* Farrer, a subspecies of *Potentilla fruticosa* L., was another important contribution.

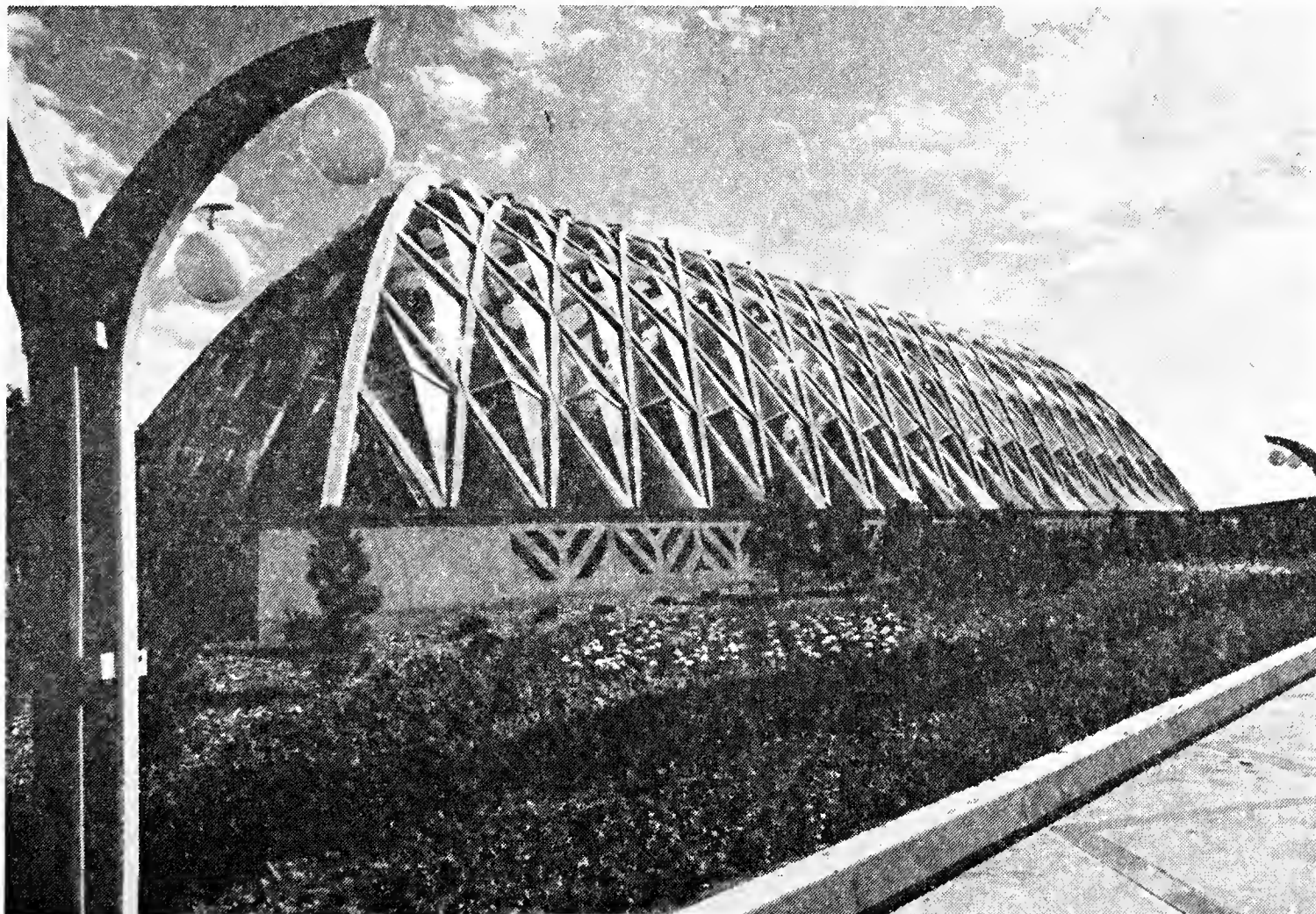
Catalogs from Rockmont Nursery offered accurate descriptive and horticultural hints for growing such popular natives as hollygrape ninebark, sumac, thimbleberry, dogwood, New Mexican privet, mockorange, leadplant, and hawthorns. A few of the wildflowers listed were mariposa lily, marsh marigold, spring beauty, western shooting star, gay feather, mountain and prairie bluebells, evening primroses, mallows, and yuccas.

In late years, before his death, the University of Colorado awarded him the honorary degree, Master of Science. Many oaks, lindens, horse chestnuts, and other unusual trees in Boulder and in Denver's parks and gardens are living tributes to this quiet, gentle horticulturist who tempered greatness with humility.

#### REFERENCES

- Conversations with Philip Andrews, who recently donated valuable papers belonging to D. M. Andrews' family to Denver Botanic Gardens.
- Conversations with George Carlson, Steven James, Anne and Everett Long, William H. Lucking Jr., Juanita Ferguson Morse, Charles Wilmore, and Scott Wilmore.
- Interview on tape, Colorado Historical Society, Carlisle Ferguson by Elinor Kingery.
- Unpublished manuscripts:
- Cockerell, T. D. A., Introduction for an unpublished book by D. M. Andrews.
  - Crisp, Katharine Bruderlin, *Trees of Denver*, University of Colorado, Dept. Biology. Unpublished Thesis, M.A., 1933.
  - Kelly, George W. *Colorado Horticultural Pioneers*.
  - Kelly, George W. Notes from records of Colorado Horticultural Society meetings.
  - Steele, Mildred Andrews, *Darwin M. Andrews, Pioneer in Horticulture*.
  - Wilmore, W. W., An autobiography courtesy Scott Wilmore.
- Denver City Directories, 1875 - 1910.
- Articles:
- "Andrews, D. M., Pioneer Rocky Mountain Horticulturist" in *The Green Thumb*, May 1944.
  - "Denver's First Arboretum" in *The Green Thumb*, Sept.-Oct. 1945.
  - Hensley, Olive, "William Newton Byers, Pioneer" in *The Green Thumb*, March 1945.
  - Mellen, Anna S., "Mr. and Mrs. M. J. Webber of Broadview Nursery" in *The Green Thumb*, March-April 1946.
  - Pabor, William E., *Colorado as an Agricultural State*, Orange Judd Co. New York, 1883.
  - Pesman, M. Walter, "Milton J. Webber, Horticulturist" in *The Green Thumb*, January 1951.
  - "The W. W. Wilmore Nurseries - Colorado's Oldest" in *The Green Thumb*, June 1961.
- Catalogs: Rockmont Nursery 1909, 1919, 1924.
- Personal Papers: Long's Gardens.

The Conservatory





# BRITISH GARDEN TOUR

Josephine Robertson

Monday morning, May 24, our sleepy eyed group left Heathrow Airport for London's Tara Hotel. There we met Jean Simmons, our charming young tour manager, who advised us not to give in, but to get out and see the town, go to bed at a normal hour, and, she assured us, wake up bright as new. (Well, almost.) This was the start of the Denver Botanic Gardens' three week tour of Britain, beginning with a day at the famous Chelsea Flower Show, visits to some of the great gardens near London, a coach tour north to Edinburgh, then back by another route for a gala finale in London. Through the presence of our director, Dr. Gambill, and our consulting expert, T. Hope Findlay, we were given red carpet treatment in Britain's wonderful garden world.

Since we had all become members of the Royal Horticultural Society as part of our "package", we were able to attend the Chelsea Show on Tuesday, its opening day. This is reserved for members and royalty, who, unfortunately, were off on state visits. The Show is staged in an enormous tent on the grounds of the Chelsea Royal Hospital, a Christopher Wren building for aged veterans. Here, each year, the nurseries, private exhibitors, societies, and parks departments bring the best of their best in an overwhelming display. Masses of orchids, sweet peas, fuchsias, roses, azaleas, rhododendrons, astilbes, dianthus, poppies, carnations, herbs, and man-high delphinium greet the viewer. Vegetable and strawberry entries were like still life paintings. Miniature gardens abounded. Cacti, many from our southwest, were popular, but particularly

notable was the number of bonsai displays. One marvels when a grower can coach his tiny venerable wisteria or laburnum to peak bloom just in time for the show. Long lines queued up to visit the floral arrangements in a smaller tent, while model gardens were established, as if by magic, on the grounds outside. In the afternoon, Dr. Gambill was invited by Lord Aberconway, president of the Royal Horticultural Society, to a reception for distinguished guests.

The day of the Show was damp and raw, in spite of the long English drought. We could see that the grass in the parks was brown — even more so when we returned two weeks later — but the deeper rooted plants and trees fared better and I read comments on the unusual brightness of the flowering trees and shrubs.

This was the 55th Chelsea Show of the Royal Horticultural Society, which was founded in 1804, an exciting time in the garden world, when wealthy landowners vied for novel horticultural imports from America and the orient. The Society has many other seasonal shows and maintains the fine garden at Wisley. Today many of its activities are threatened by inflation, high costs, and reduced incomes of contributors. It welcomes to membership anyone interested and offers, among other benefits, an excellent magazine, *GARDEN*.

We learned a great deal from our traveling companion, Mr. Findlay, a quiet man with the ruddy complexion of one who has lived his life outdoors. He received his formal training at Wisley, where his father was in charge, worked on the great estates of Bodnant and Luton Hoo, then went to the royal

gardens at Windsor. In 1975 he was honored by the Queen for thirty years of service and became a Member of the Victorian Order. He also received the Victorian Medal of Horticulture. Now, in semi-retirement, he is garden consultant to the Queen and is planning new landscaping for her home at Sandringham.

During our stay in London we visited Kew Gardens, Hampton Court and Mr. Findlay's special province, the great Savill and Valley Gardens.

Winston Churchill was much in our thoughts as we visited his country place at Chartwell and the country churchyard at Bladen where he lies, by his own request, with a simple marker close to his parents. We were charmed with Chartwell, no mansion but a comfortable country home, full of mementoes of his great days, surrounded by colorful plantings, walls he had built, and a garden where his children had planted fifty yellow roses in honor of their parents' golden anniversary. Later in the trip we saw the magnificent palace of Blenheim where he was born — unexpectedly — when his parents had gone there for a ball.

At Sheffield Park Gardens, an 18th century estate laid out with five lakes on different levels, beautiful shrubbery and trees, we were conducted by the head gardener. He is a young man who impressed us all by his enthusiasm for his work, which was not easy, as there were only five employees, at the peak season, to mow, prune, plant, and maintain the spacious grounds. He showed us the fine plants as though they were crown jewels. "Getting our here early," he said with feeling "when the birds are singing . . . . well there's nothing like it!"

Chartwell and Sheffield are National Trust properties as were many others we visited. In London while we enjoyed a dinner at the old and glamorous Garrick Club, hung with portraits of the theatrical great, we learned of the work of the National Trust in preserving great homes and gardens, opening them to the public at certain times and allowing the owners to live there relieved of crippling taxes. We became members of the Royal Oak Foundation, the American branch, which gave us passes for the Trust properties we visited.

Garden Excursionists



As we started our northern trip we stopped first at Wisley, near Ripley. Here the RHS carries on a training program for young gardeners, has extensive trial plantings with awards for outstanding varieties, peat gardens, many flowers, model fruit and vegetable gardens. Particularly colorful at that time was the heather garden.

From there we went to Exbury, famous for its rhododendron and azalea hybrids. These were developed by the late Lionel de Rothschild. Although it is now a commercial nursery, we enjoyed a conducted tour through the original gardens which included gnarled veterans that were trophies of early collectors and their colorful descendants. Here, as in most of the gardens we visited, we saw masses of rhododendrons and azaleas, a novel sight for Colorado eyes.

We spent a night in Southampton with rooms high in the Post House, with stunning views of the harbor from which the Pilgrim Fathers set sail in 1620. After a rainy morning in Bath we visited Stourhead Gardens, an unscheduled treat. Even in a drizzle we were enchanted with this two century old romantic creation, with its little classic temples reflected in the tranquil lake surrounded by flowering shrubs and ancient trees.

Two nights at the vast new Hilton in Stratford-on-Avon gave us a glimpse of the Stratford gardens, an opportunity to attend the theatre, and a day trip to Blenheim and Oxford.

A joy to tree lovers was the visit to Westonbirt Arboretum, truly a garden of trees, planted for color in spring and rare in England, a magnificent burst of color in autumn. Planted in allees to open up vistas, cedars of Lebanon and the columnar incense cedars tower above century old oaks, maples, Douglas firs and even California redwoods. It is regarded as the finest collection of trees in England and is administered by the

Forestry Commission. Two nights in Chester made possible a long and delightful day in Wales, with lunch at the fairy tale village of Portmerion and an afternoon spent at Lord Aberconway's magnificent hillside gardens at Bodnant.

We were privileged to have conducted tours of three great Botanic Gardens, Oxford, Cambridge, and Edinburgh. Oxford is the oldest, dating back to the early 1600s. A fascinating old walled garden, it has a dreamy quiet, although just off a busy highway. The Cambridge Botanic Garden is larger — forty acres — and is blessed with a large bequest which makes new features possible. It has many special collections and facilities for experimental work. The Royal Botanic Garden of Edinburgh has been in its present location for about one hundred fifty years, is world famous for its rock gardens, rhododendron and meconopsis, its collection of eastern plants, and the complex of glasshouses. Time is never long enough in such gardens!

After leaving Chester we stopped at Arley Hall Gardens where we were welcomed by Lord Ashcroft and his wife, Viscountess Ashcroft, whose family has lived on the estate for five hundred years. Though a National Trust property, this is still their home, but is open to the public during visiting hours. We were invited for a private tour during the morning and escorted through the beautiful grounds by the owners. An unusual feature is an avenue of *Quercus ilex* L. or Holm oaks, clipped in columnar form, and a pair of long herbaceous borders flanked by finial topped yew buttresses. This is one of the first herbaceous borders introduced in Victorian days by Gertrude Jekyll and William Robinson.

We had a showery glimpse of the lake country on our way to Edinburgh where we spent three nights — and a welcome



day of leisure. Enroute we stopped at Levens Hall near Carlisle for a look at the fantastic topiary. On our way back to London we had an unscheduled opportunity, on a beautiful morning, to see the Harlow Car Gardens of the Northern Horticultural Society near Harrogate. We enjoyed seeing these plantings, done on a modest scale, and came away with ideas for our own gardens. On our final afternoon in London, we went out to the Garden Center at Syon, where the romantic grounds, landscaped by "Capability" Brown, are open to the public and

where in a screened off area, the Center offers all kinds of plants and equipment.

As we traveled from garden to garden, we had the opportunity of seeing many other things and places: Stonehenge, the great houses of Wilton and Luton Hoo, the walled towns of Chester and York, the cathedrals of Durham, Lincoln, York, and Coventry.

Many memories linger besides those mentioned in this account which is neither complete nor chronological. It was an intensive three weeks, but we realize that we have seen only a sampling of the great English gardens.

Cedars of Lebanon



# Exotics of COLORADO



## Bur Oak

### *Quercus macrocarpa*

Helen Marsh Zeiner

A variety of oaks can be found growing in Denver, but bur oak (*Quercus macrocarpa* Michx.) is most often seen. Over the years it has proved to be a desirable tree for this area, adjusting well to both climate and alkaline soils and resisting breakage from heavy snows.

*Quercus macrocarpa*, characteristic of the midwest, has a wide natural range extending from New Brunswick to central Maine and western New England to southeastern Saskatchewan on the north. The western boundary extends south through the Dakotas and eastern parts of Nebraska, Kansas, and Oklahoma into Texas. The eastern boundary extends from western Pennsylvania and Ohio, Kentucky, northern Tennessee, northern Arkansas, through Oklahoma and into Texas. The southern boundary in Texas reaches almost to the Gulf of Mexico. Bur oak is common in Nebraska and is the most generally distributed oak of Kansas. The largest trees are found in southern Indiana and Illinois.

Bur oak is a slow growing, strong, long-lived tree which may reach a mature height of 70 feet. In its native habitat, taller trees are reported.



Acorns — *Quercus macrocarpa* Michx.

It is easily recognized by its distinctive leaves. They range from 6 to 12 inches long and 3 to 6 inches wide on the upper half — the largest of all oak leaves. They have five to seven deeply rounded lobes which are irregular in shape. The terminal lobe occupies at least 1/3 of the entire leaf. It is separated from the remaining lobes by two very deep, wide sinuses which appear to divide the leaf into two parts. The large terminal lobe is irregularly crenately margined. The leaves are



wedge-shaped at the base. As with all oaks, the leaves are variable but the two-part appearance of the leaf is a consistent character. Rounded lobes as opposed to those with bristle tips indicate that *Quercus macrocarpa* belongs to the white oak group.

The acorns are also characteristic. They are large and are more than half surrounded by a cup with fringed cup scales. This fringe is responsible for the common names bur oak, burr oak, and mossy cup oak. The species name *macrocarpa* means large-fruited. *Quercus* is a Latin word for oak, and is said to come from two Celtic words *quer* and *cuez*, meaning "fine tree".

Bur oak is important commercially, especially in construction. It is valued for flooring and interior finish. It is also a desirable ornamental because it is handsome, hardy, relatively insect-free, and very adaptable to soils, climate, and adverse city conditions.

Bur oak has an interesting history in the Denver area. It is known to have been brought to the Sam Brown farm near Littleton in 1871. Katharine B. Crisp, in a study of trees of Denver, wrote in 1933: "Another interesting instance of pioneer experimentation in tree planting is seen in two rows of fine bur oak trees, twenty-six in all, situated along a road northwest of Littleton. These were started by Mrs. Sarah Brown in 1871. Her son, Clarence E. Brown, who still owns the farm, says that his mother brought the bur oak seeds and seedling trees from Kansas and planted them in that year, upon returning from a visit to relatives there. She first planted the seeds and seedlings in nursery rows. When they were well established some of them were transplanted to the roadside. Now, 62 years later, they are 2 feet or more in diameter and 50 to 55 feet in height. Over 200 trees are still growing in the nursery location. Standing closer together, they are considerably taller than those along the roadside."

Some of these trees can still be seen at South Federal Boulevard and West Union Avenue, where there are several in a row along West Union just east of South Federal. A few are growing in adjacent Centennial Park. Several other very beautiful specimens can be seen in a housing development west of South Federal. About 20 years ago when this land was developed, several of the finest of the Brown oaks were uprooted by the developer who thought the land should be completely cleared. Concerned citizens including Mrs. Crisp and George Kelly were able to convince the developer that it would be a definite asset to the subdivision to spare some of the irreplaceable and very beautiful trees. Those that are left provide shade and beauty for their lucky owners.

Bur oaks were also planted in Denver on what is now the site of Byers Junior High School at an early date by William Newton Byers. Mr. Byers presented a paper to the Denver Horticulture Society about 1881, and at this time he stated that bur oak was his favorite oak.

In 1917 bur oaks grown from acorns gathered from the Brown farm were planted on the south side of Cherry Creek between Bannock and Broadway, along what was at that time Forest Drive but which is now southbound Speer Boulevard. These bur oaks were planted by S. R. DeBoer as part of a "city forest" requested by Mayor Robert Speer. In 1946 Mr. DeBoer reported that these trees were taking on their mature shape.

#### REFERENCES

- Byers, William Newton. "Denver's First Arboretum". *The Green Thumb* (September-October 1945), p. 12.
- Collingwood, G. H. and Warren D. Brush. *Knowing Your Trees*. Washington, D.C.: The American Forestry Association, 1964.
- Crisp, Katharine Bruderlin. *Trees of Denver*. Boulder: University of Colorado, Dept. Biology. Unpublished Thesis, 1933.
- DeBoer, S.R. "Oak Trees in Denver". *The Green Thumb* (September-October, 1946), p. 3.



# Cemetery to Conservatory

## Part II:

### Cheesman Park

Louisa Ward Arps

By 1890, nobody wanted a cemetery in the middle of the best prospective real estate district in Denver — eastern Capitol Hill. Real estate men dreamed of total coverage of the area, selling two lots, each 25 feet wide, for family men to establish their homes, side by side with other families. An adjacent cemetery was not a good selling point. The all-powerful senator from Colorado, Henry M. Teller, urged by city developers, had no trouble persuading Congress that the land the United States had sold to Denver at \$1.25 an acre for burial purposes "in perpetuity" could now be changed to a park, called Congress Park. After 1890, real estate men could assure their clients of a neighborhood park, not a bone yard. The park would not include the Roman Catholic and Jewish cemeteries, only the 80 acres of the City Cemetery, present Cheesman Park.

Denver was on the crest of the tidal wave that had rolled in during the 1880s. Its population increased in that decade from 36,629 to 106,713. In 1890, 2328 dwellings were built, many of them in East Denver where water could flow by gravity from Cherry Creek to the new reservoir on Cemetery Hill, and thence by gravity to the houses.

In 1891 Denver hired its first paid park commissioner, and two years later divided the town into park districts. But by mid-summer of that year nothing could be done for parks or any other public project, because of the 1893 silver panic. "The social and business life of Denver was forced into the valley of desolation," including home building.<sup>1</sup> Only 124 houses were built in 1893. In 1894 the city built a three board fence around the incipient Congress Park and let it lie.

When Denver started marching up hill again, it happily found a young landscape architect who could plan its development. Reinhard Schuetze had come to Denver in

the 1880s in time to lay out the circular drives and plant the trees in Fairmount Cemetery. He was from Holstein, Germany, a graduate landscape architect and civil engineer. At Fairmount his job was finished when he devised a reservoir system to catch the sporadic water of the Highline Canal.

The city of Denver employed him to re-plan City Park, lay out Congress and Washington Parks, with their great expanses of green lawns, and landscape the Capitol grounds. As can be seen by the map of Schuetze's plan for Congress Park, the plan is essentially what the park is today, except that his lily pond has never had any water in it.<sup>2</sup> Generations of East Denver children have enjoyed riding bicycles into the depression, over the mound in the middle, and up the other side. Some children called it the "Cup and Saucer."

By 1900, improvements in Congress Park actually started. The fences were repaired, High Street and 12th Avenue were opened through the park, and the roads graded. Today, High Street is closed, but the 12th Avenue route is still used by cars and buses, giving passengers a view of the Japanese Tea House, planned by Schuetze, and of the lawn leading up to the pavilion, also planned by Schuetze.

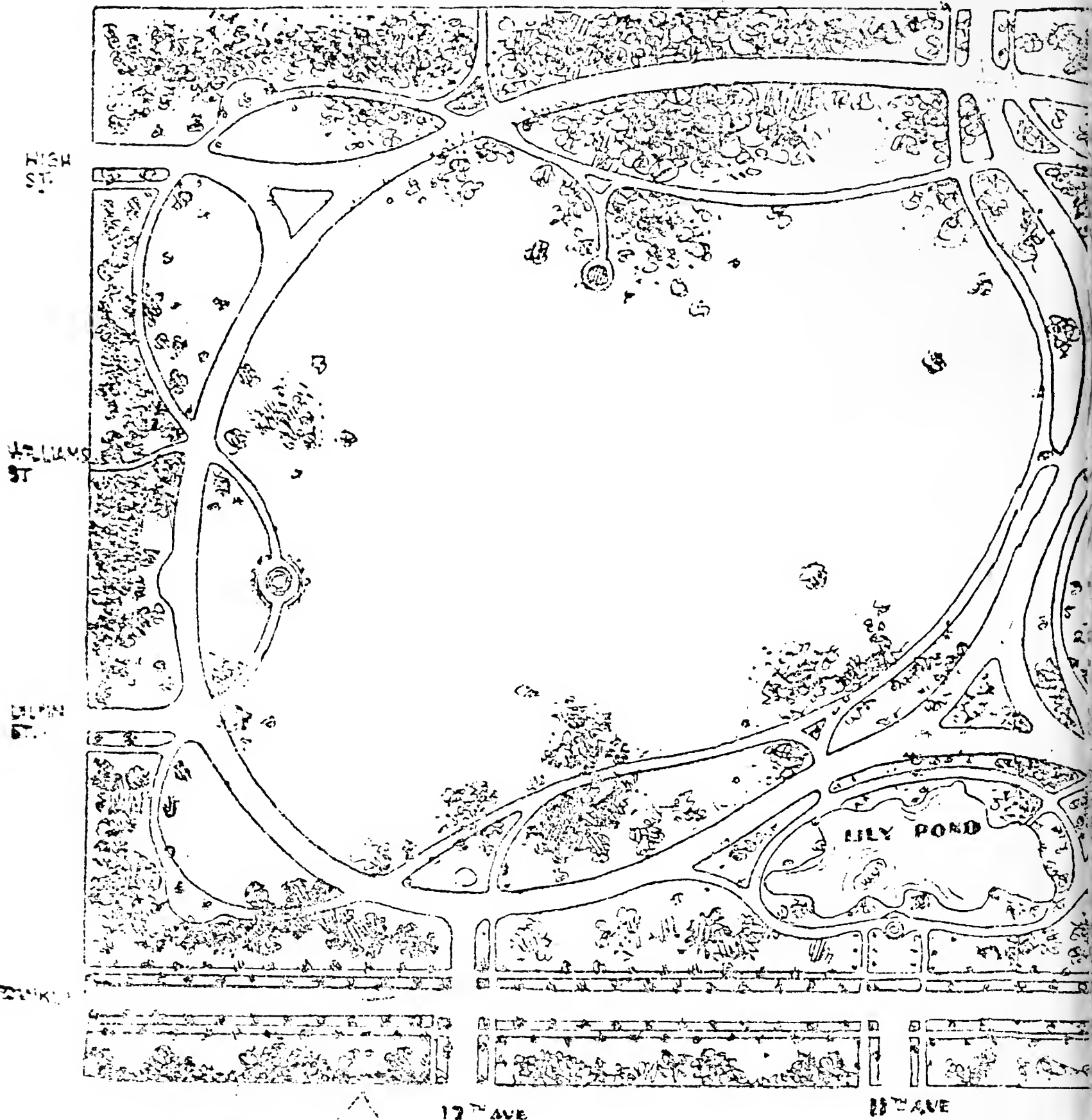
In 1902, shrubs were planted, and an item in the paper reported that the home owners around the park were delighted to have the shrubs. Later, the home owners could not see the park because of the shrubs and demanded they be thinned. The north half of the park was prepared for grass seed. This involved filling holes where coffins had been removed and leveling places that had fallen in because coffins had collapsed, a problem still occasionally faced by park maintenance men.

Schuetze's influence is still felt today in the open lawns and in the variety of trees he imported. In 1933 in Cheesman Park, 47 varieties of trees were counted, many of which could be traced to Schuetze's regime.<sup>3</sup>

In a history of Cheesman Park, a digression on the subject of Denver politics may seem tangential, but the further development of Cheesman Park as well as other parks and boulevards of Denver hinged on power politics. Denver was part of Arapahoe County, and was governed by the same men who ran the state — men of big business, of public utilities, Republicans all. In 1895 the first independent mayor was elected and agitation for home rule started. Article XX of the State Constitution was ratified in 1902. In the first election of the newly formed City and County of Denver an astute politician named Robert W. Speer became mayor, a job he held from 1904 until 1912, then again from 1916 until his death in 1918. Mayor Speer ran a tight political machine in order to stay in office so that he could make his dreams for a beautiful city come true.

Speer visited Germany, where he admired its statues and parks and especially the Berlin Boulevard called "Unter der Linden." Schuetze, back in Denver, must have heartily agreed when the mayor, in 1907, ordered four lines of linden trees planted on either side of Franklin Street, which ran straight along the west side of Cheesman Park. After Schuetze's death in 1910, a Dutchman named S. R. DeBoer became city landscape architect.<sup>4</sup> He soon observed that Franklin Street, which connected directly with Park Avenue, was becoming a drag strip for speeding motor cars, so he closed off Franklin Street. Today, four intermittent lines of linden trees in the western end of the park still attract bees to their blossoms in early June.

One of Mayor Speer's techniques in getting money to finance the beautification of his beloved city was to appeal to private citizens with the motto, "Give while you live." Denver is full of statues, gateways, and boulevards resulting from this approach, including the Cheesman Pavilion in Cheesman Park.



## LANDSCAPE MAP OF CONGRESS PARK

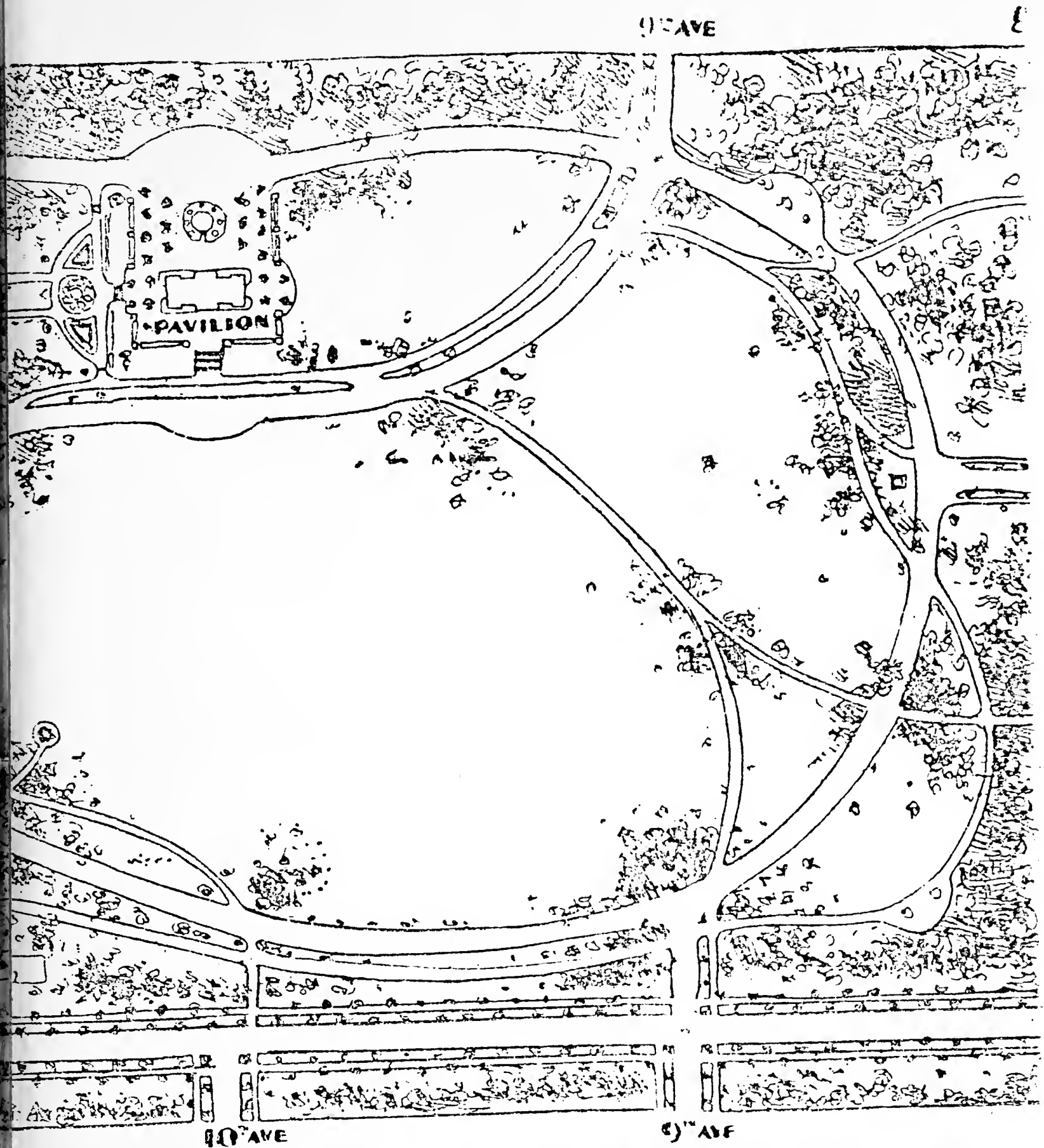
*Legend under Schuetze map of Congress Park*

The park commissioners have adopted a plan for the beautifying of Congress Park and in the course of a few years it will rival City Park and thousands will revel on the sward beneath its spreading trees. The design which is presented herewith is the work of Reinhard Schuetze, the landscape artist employed by the board, a man who has his heart in his work.

The park consists of eighty acres and extends from Eighth Avenue almost to Thirteenth Avenue, and from the alley between Humboldt and Franklin to the alley between High and Race. This year the commissioners are improving that portion lying north of Eleventh Avenue. Two thousand trees and shrubs will be set out and some grass sown. Next year it is hoped that the board will be in better financial shape and a greater portion of the ambitious plans will be executed.

On the east side of the park, immediately south of Eleventh Avenue on a high terrace which commands a view of the entire tract, a pavilion will be erected and beneath it will





## DESIGNED BY REINHARD SCHUETZE.

in Scrapbook, vol. 2, p. 64. Dated in pencil, 1902.

stretch a magnificent expanse of lawn. To the north of the pavilion Mr. Schuetze proposes to locate a flower garden which will surpass anything in this city. On the west side near the Eleventh Avenue entrance an excavation will be made for a shallow lake covering an acre and one-half. It will be filled with water lilies.

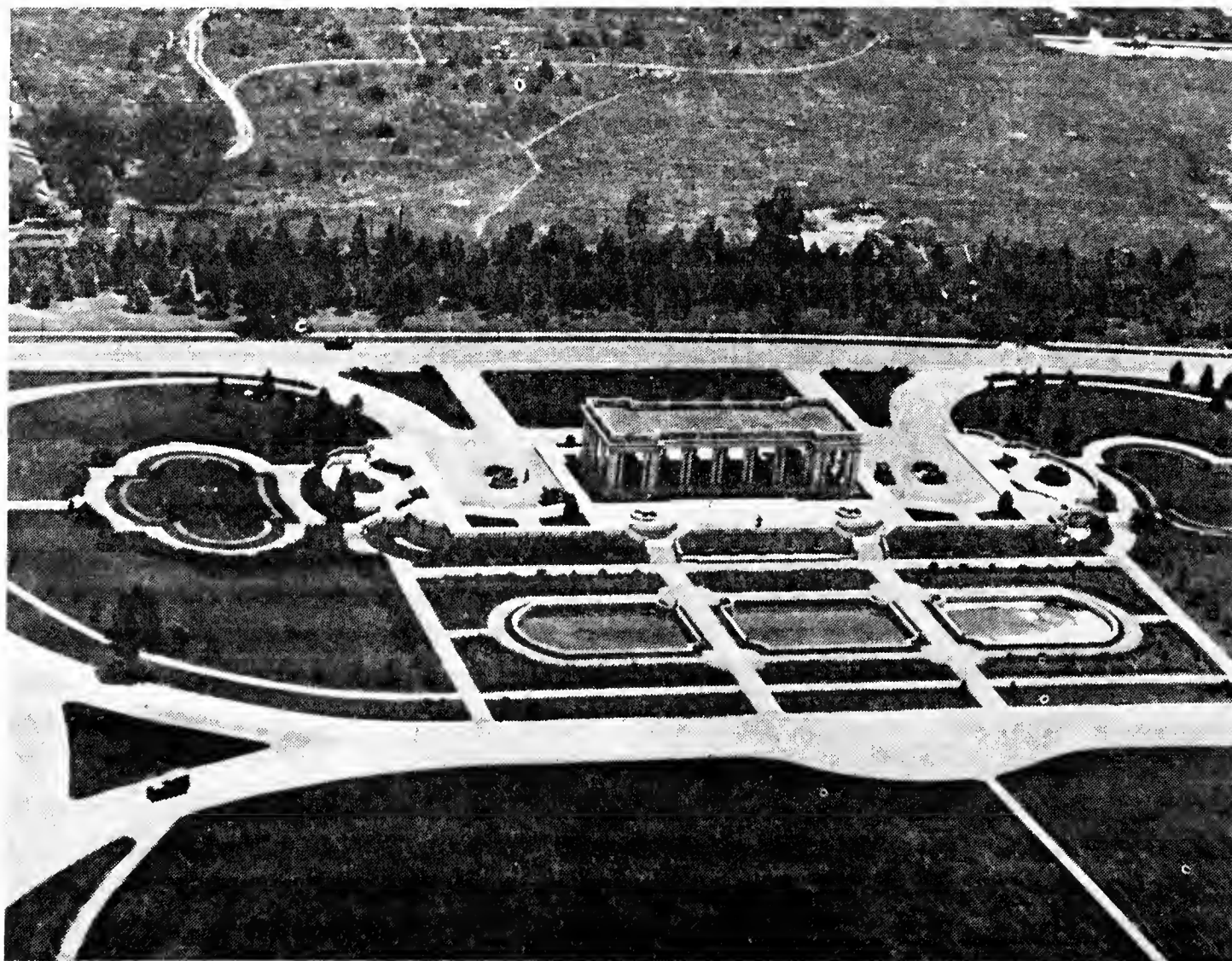
Franklin Street traverses the entire length of the park and it is proposed to plant two lines of European lindens on either side of the thoroughfare. Mr. Schuetze hopes to make a miniature of the famous Berlin boulevard, the *Unter den [sic] Linden*. None of the east and west avenues will run straight through the park. Most of the shrubs and trees will be secured in Colorado, and men will be dispatched along the Platte under the direction of competent foresters to bring in the varieties which are best adapted to the needs of the park. Some trees will be brought from outside the state and Mr. Schuetze says he will import species which have never been seen in Colorado, but which he is confident will thrive here.

To explain why Congress Park changed its name to Cheesman Park we must return to the beginning of Denver, 1860, when a young man named Walter Cheesman came to town to start a drug store, and stayed to be a power in many Colorado enterprises — mines, railroads, banks, and water works. He died on May 31, 1907. On July 26, 1907, Mayor Speer signed an ordinance submitted by the City Council to change the name of Congress Park to "The Walter S. Cheesman Park." This was done because Cheesman's widow, Mrs. Alice Foster Sanger Cheesman, and his daughter, Gladys, gave \$100,000 to erect a marble pavilion to Cheesman's memory at the top of the hill in Congress Park. The site was appropriate because of Cheesman's connection with the Cemetery Hill reservoir whose water made possible the greening of the park.

Soon Marean and Norton, Denver architects, submitted plans for a Greek pavilion, G. S. Kessler of Kansas City planned the landscaping around the pavilion, and Colonel C. F. Meek, owner of the Yule Marble Company on the Crystal River not far from Glenwood Springs, offered to furnish marble for the memorial at cost. Great blocks of pure white marble were lifted from the immense caverns of Treasury Mountain and brought on flat cars down to the extensive works at the town of Marble, where they were fashioned into sections of columns, numbered, and shipped to Denver. Soon the blocks rose, one on top of another, to support the marble roof.

A cement platform surrounded the Greek temple, and balustraded steps of cement led down to the lawn on the west. When all was practically finished, the City Council, on October 30, 1909, refused to accept the pavilion.<sup>5</sup> It was the official position that the cement work had been poorly done. The paper published a picture of cracks in the cement which would doubtless widen during cold weather. The Ladd Sanger Construction Company who had laid the cement was blamed.

Cheesman Memorial



Much investigation ensued. In November, the City Council again refused to accept the gift, this time partially because the architects had not been fully paid.<sup>6</sup> But in a few weeks the problems had been solved, without publicity, and the city accepted the generous gift in an appropriate dedication ceremony.

Later, further improvements were made at the pavilion. Wading pools were added at the foot of the western stairways, the Portland Cement Company donated drinking fountains north and south of the building, and S. R. DeBoer, city landscape architect, planted grass to 8th Avenue.

In 1912, the East Denver Park District was bonded for what was called the Cheesman Esplanade. This included the block extending south from 8th Avenue between Williams and High Streets. This block is much narrower than a standard block, and the reason it was utilized as an extension to the park is said to have been because owners of houses facing west on High Street did not wish to look into the backyards of houses that might be built on Williams Street.

"Cheesman Park is the great showplace of Denver . . . . The clear unobstructed view which it commands of the city, the valley beyond, and the mountain range in the distance [is] an inspiring spectacle of which no other city on the American continent can boast . . . . as far south as the New Mexican line and north to Wyoming."<sup>7</sup> So wrote Mayor Speer's public relations man in 1910 in Mayor Speer's public relations monthly magazine, the *Denver Municipal Facts*.

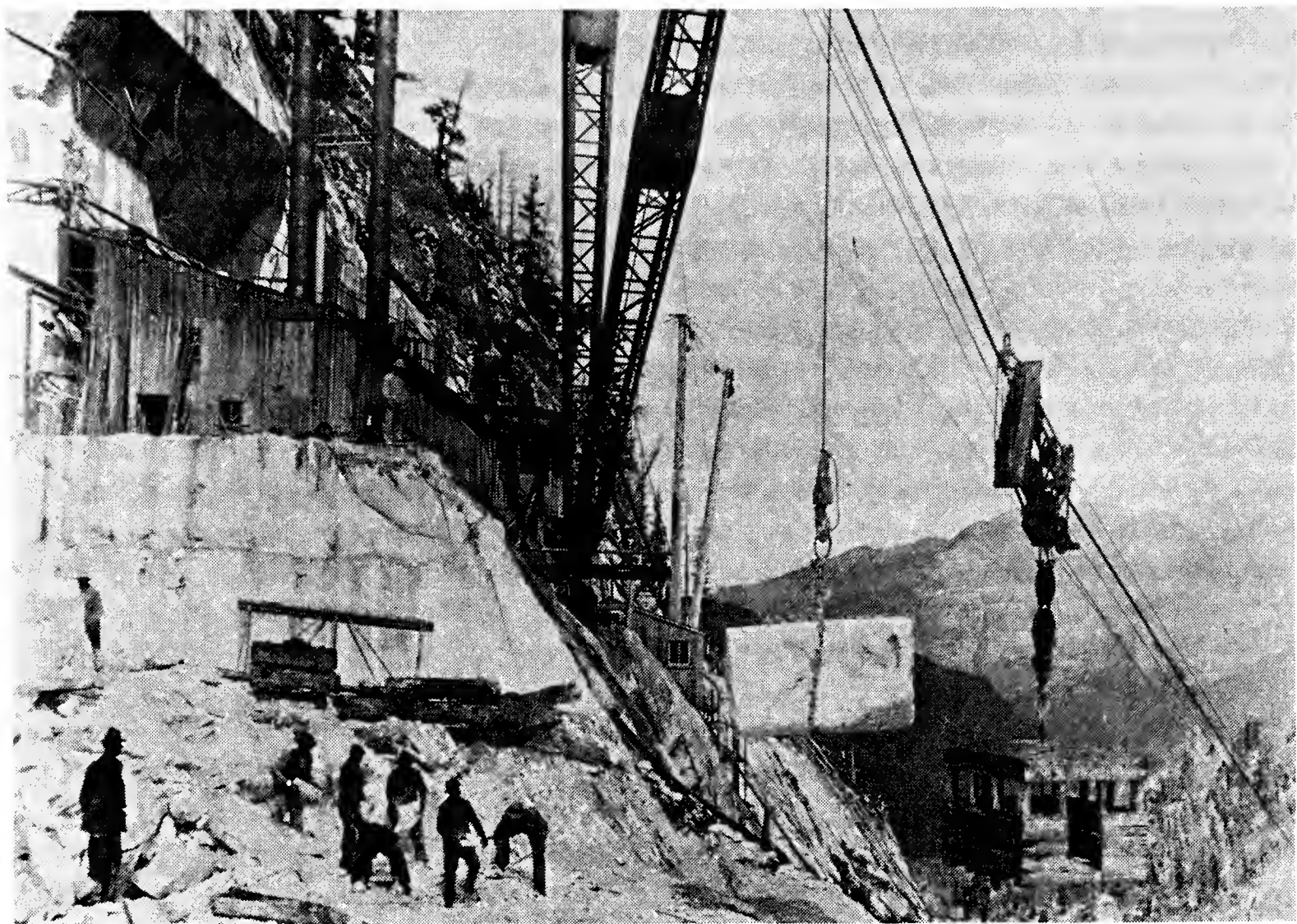
Other cities took exception to the boast about the only city with a mountain view, and Colorado men who knew their mountains took exception to the New Mexico to Wyoming claim. Two of these men were James Grafton Rogers and Ellsworth Bethel.<sup>8</sup> Instrumental in forming the Colorado Mountain Club in 1912, they interested the governor in appointing the Colorado Geographic Board two years later, "to fix definitely and for all time the nomenclature of the peaks in sight of Denver." The Board, led by Rogers and Bethel, worked hard on this project. They "fixed for all time" such names as Mount Evans and Rosalie Peak, which had been vaguely interchangeable up to then.

These two men devised a semi-circle drawing of the view from Cheesman Park, which Paul Weiss, Denver optician, engraved on bronze. In 1916 the Colorado Mountain Club erected a pedestal on the west side of the Cheesman Pavilion to hold the bronze mountain indicator, showing the view from a little south of Pikes Peak to a little north of the Estes Park Mountains.

From the beginning, Cheesman Park was well used. The Japanese tea house sheltered many a picnic from a sudden storm; the never-filled lily pond afforded fun to children; ladies and gentlemen absorbed the warmth of the sun through their voluminous clothing, and dogs raced through the park at will. One unexpected use of the park occurred all the night of July 14, 1912, when the Red Cross served coffee to refugees from houses along the banks of Cherry Creek which was flooding the Country Club District and downstream toward the South Platte River. On August 3, 1933, the Red Cross again served coffee to those refugees who had not gone to the creek to see the flood. This was when Castlewood Dam broke.

In 1929, Al G. Birch, public relations man of *The Denver Post*, decided to give Denver an outdoor university. Dr. Duren J. H. Ward gave the first lecture, and the university ran at least seven seasons.<sup>9</sup> In 1934, *The Denver Post* staged its first annual Post Opera, one of Denver's most successful annual events. Utilizing the Cheesman Memorial Pavilion for its stage, and the green lawn for seats for its audience, the Opera has shown to Denver almost all the successful musicals of New York's Broadway, from





Marble for Memorial

the *Student Prince* to the *Sound of Music* and *Hello, Dolly*.<sup>10</sup>

From the 1910s to the early 1960s, Cheesman Park lay on the top of its East Denver hill, well used, with its view to the west, surrounded on the other three sides with nothing but trees, which hid most of the adjacent houses, and sky. In the late 1960s, the first of the high-rise apartment houses cut the horizon, and in the 1970s the Park People made extensive revisions of the park lay-out and the crumbling cement work around the Cheesman Pavilion. The next issue of *The Green Thumb* will bring the Cheesman Park story up to date.

#### REFERENCES

The source for much information on parks in Denver appeared in the magazines published by the City of Denver under three titles: *Denver Municipal Facts*, v. 1-4, 1909-1912; *The City of Denver*, v. 1-3, 1912-1914; *Municipal Facts*, v. 1-14, 1918-1931.

1. Smiley Jerome, *History of Denver*. Denver; The Times-Sun Pub. Co., 1901. p. 916.
2. This "Landscape Map of Congress Park" is pasted in *Burton's Scrapbook* no. 2, in the Western History Department of the Denver Public Library. The date 1902 was added in pencil. Information about Schuetze is found in Halaas, D. F. *Fairmount and Historic Colorado*. Denver: Fairmount Cemetery Assoc., 1976.
3. Crisp, Katharine Bruderlin *The Trees of Denver*. Unpublished Thesis, M.A. University of Colorado, 1933. This thesis includes a map of the species of trees found in Cheesman Park.
4. The whole issue of *The Green Thumb* v. 29, #5, Dec. 1972, is devoted to S. R. DeBoer.
5. *Denver Times*, Oct. 30, 1909. p. 5.
6. *Denver Times*, Dec. 24, 1909.
7. *Denver Municipal Facts*, Oct. 1, 1910.
8. Arps, L. W. and Kingery, E. K. *High Country Names*. Denver, Colorado Mountain Club, 1966. pp. 4-9.
9. *The Denver Post*, June 20, 1929; Sept. 2, 1935.
10. Information about the Post Opera is found in summer issues of *The Denver Post* from 1935 to date.

# AUTUMNAL SPLENDOR

William G. Gambill, Jr., Ph.D.

Autumnal coloration in Colorado differs from that of the midwestern and eastern states in that a golden yellow is the predominating color and in the vastness of its reach over very extensive areas in this large state. The mountainous portions are the scene of the most spectacular coloration, but even in the high plains areas where trees and shrubs are restricted to the immediate vicinity of lakes and streams vivid color is present in the fall. High mountains or plateaus occur in roughly the western half of Colorado. This state has several National Parks, National Monuments, Wilderness Areas, and National Forests and it is primarily in these sites, though not necessarily in all of them, that the rich colors of native vegetation in the fall are concentrated.

Various members of the genus *Populus* are responsible for the vast sweep of fall color in the Rocky Mountains, but by far the most abundant and significant is the population of *Populus tremuloides* Michx., the quaking aspen, referred to popularly as "the aspen." This is the most widely distributed tree in the Rocky Mountain States, in fact in all of North America, where it extends from the New England States and eastern Canada across most of our northern states and the southern provinces of Canada up into Alaska, and southward through most of the western states and beyond New

Mexico and Arizona into Mexico itself. This tree thus contributes its golden splendor in the autumn over wide reaches of the continent.

The quaking aspen reaches its highest elevations in the mountains of Colorado where it covers the flanks of the tall mountain peaks in all of the mountain ranges, reaching as high as 11,000 ft. into the Subalpine Life Zone in some areas and extending downward into the low Foothills Zone to 6,000 ft. elevation. The fall color of this tree may be not only the characteristic golden yellow, but in certain areas and certain seasons this color will be intensified into a pinkish-orange and even into pale to brilliant red.

The narrowleaf cottonwood (*Populus angustifolia* James) is the next most abundant member of the genus *Populus*. It is restricted to stream banks and other moist places from the foothills and well into the Montane Zone in Colorado. This tree is spectacular in the fall along the streams in the canyons of the mountains as well as in the open places such as the large mountain "parks" of Colorado. In western Colorado in the valley of the Colorado River and its tributaries this tree presents a spectacular display because it is much larger and taller than *P. tremuloides* forming many miles of rich golden masses and spires. Middle Park in Colorado is a favorite place to see

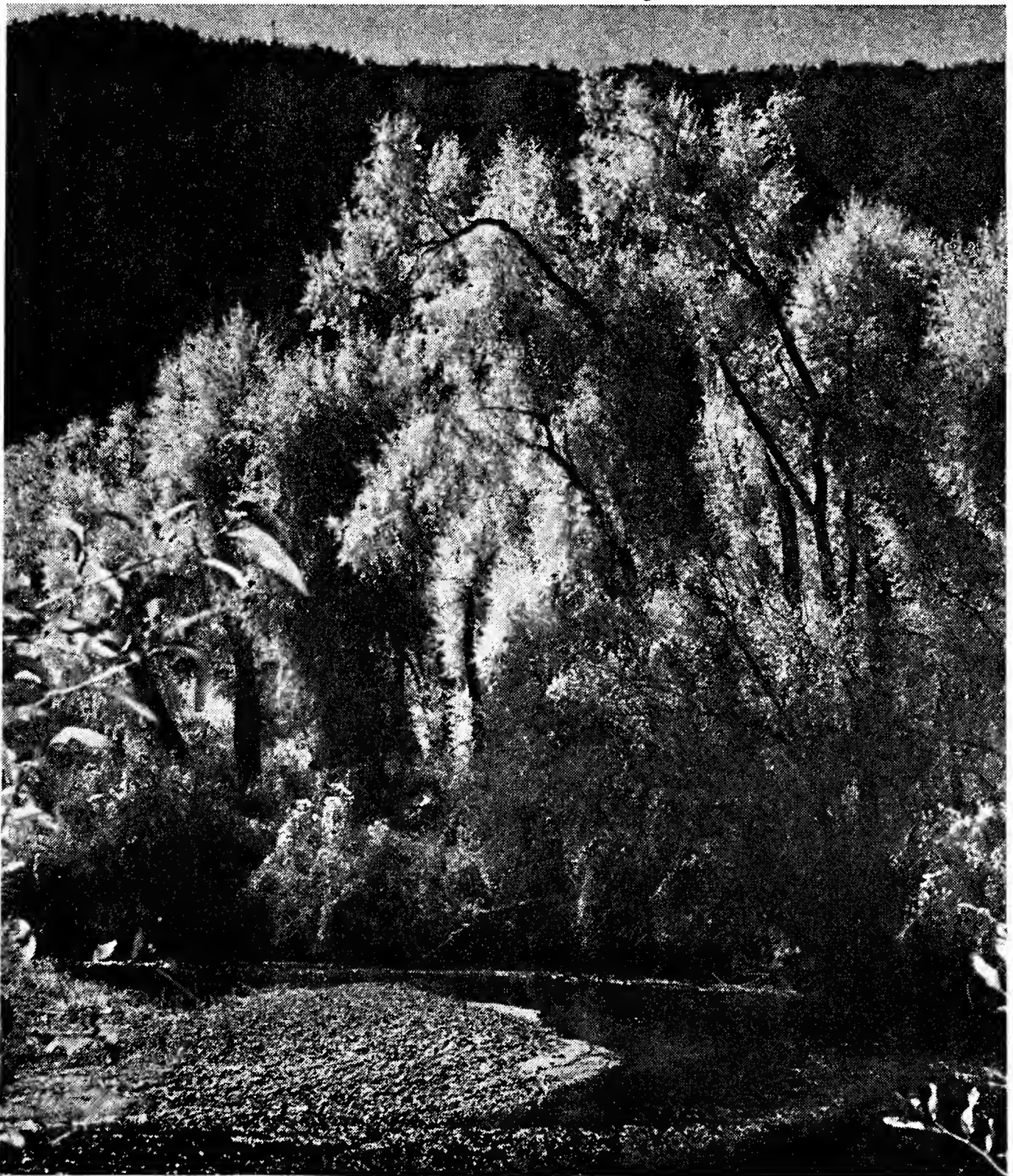


this type of display, although it is found in many other areas of the Colorado mountains. It is interesting to note that where the range of narrowleaf cottonwood overlaps or meets that of the plains cottonwood (*Populus sargentii* Dode) a first generation hybrid of these two known as the lanceleaf cottonwood (*Populus x acminata* Rydb.) occurs. This tree is much less abundant than the two parental species but it also contributes its own rich golden color to the fall scene. It is quite common in Colorado.

In the plains areas of the state the plains cottonwood along water courses provides a spectacular sight forming giant

ribbons of gold mixed with numerous species of willow including *Salix interior* Rowlee, the sandbar willow, *S. amygdaloides* Anderss., the peachleaf willow, and *Salix fragilis* L., the crack willow which frequently escapes cultivation. The autumnal color of these plants often lasts through November and into December, partly because the lower elevations at which they occur permit the milder temperatures of fall to last later in the year. In eastern Colorado along the Platte and Arkansas River systems these plants are especially noticed for their color. In parts of northern Colorado mountains the balsam poplar (*Populus balsamifera* L.)

Autumn on the Eagle



occurs in limited numbers, and in good years this tree also contributes to the predominant gold of the fall. In the southwest four corners area of Colorado the Rio Grande cottonwood (*Populus fremontii* S. Wats. var. *Wislizenii* Sar.) comes into the state and contributes to the fall color there.

In the mountains of southern and western Colorado there will be found the Gambel oak (*Quercus gambelii* Nutt.), also known as Rocky Mountain white oak and locally as scrub oak, covering wide areas at lower elevations and usually forming dense, almost impenetrable thickets. This plant contributes a rich bronze-red color to the landscape in good color years and is certainly the most abundant single woody plant in Rocky Mountain States which does contribute this color which is so prevalent in the oaks of the Midwest and the East. Great masses of color from this plant occur in the lower reaches of the Front Range of Colorado from Castle Rock and Colorado Springs southward and westward, and it is extremely abundant in most of the mountain ranges of western Colorado. In the Steamboat Springs area, and around Glenwood Springs, this colorful large shrub or small tree is often noted in the fall. It could be described as forming vegetational Persian carpets of varying color in the red and bronze range.

The smooth sumac (*Rhus glabra* L.) forms patches of brilliant red leaves and fruit clusters on sunny, warm, dry mountain slopes at the lower elevations. In places it is abundant enough to be truly spectacular and is one of the earlier shrubs to commence changing color in the autumn. The skunkbrush (*Rhus trilobata* Nutt.) is one of the more abundant shrubs in Colorado, chiefly at the lower elevations of the mountains. Its leaves become bright red and bronze, and its clusters of brilliant red berries borne along the stems rather than in terminal "cones" add much color to the landscape

after the leaves have fallen and the brown colors of winter appear. The poison ivy (*Toxicodendron rydbergii* (Small) Greene) is found in scattered patches particularly in the vicinity of a good source of moisture as a low shrub or climbing vine in the Centennial State. This plant can be extremely colorful in the fall, with the colors ranging from bright yellow through a rich orange to red, often with several colors occurring on the same plant simultaneously, highlighting the clusters of white berries which last long after the leaves have fallen.

The mountain maple (*Acer glabrum* Torr.) occurs in the canyons along streamsides in the Foothills and Montane Zones as a large shrub, sometimes occurring as small trees. Leaf color can vary from a rather dull yellow to a bright red in some years. The typical double samara (key) fruits generally become a brilliant red before the leaves begin to turn color. The petioles are also often brilliantly red in this plant during the growing season. The native box-elder (*Acer negundo* L.) will have leaf color in the fall varying from dull yellow to bright yellow in some years. This plant is common in gulches and along streams in the mountains and even out into the plains in Colorado.

Oregon-grape, also known as Holly-grape (*Mahonia repens* (Lindl.) G. Don) is a small shrub, generally reaching no more than 15 in. in height, which is abundantly scattered over the mesas, hills, and mountains of Colorado and is one which contributes greatly to the spectrum of fall colors. The leaves of this plant are borne the year round, and nearly always display in the fall hues ranging from yellow to orange to bright red and purplish before they slowly turn brown during the winter and gradually regain their bright green color the following spring. This little shrub bears clusters of glaucous blue fruits, and with the leaves contributes brilliant coloration in clusters of a few

plants or in the thousands, coloring the warm, dry slopes of hills and mountains where taller vegetation is scarce or lacking and the plant is in full sun.

The black chokecherry (*Prunus virginiana* L. var. *melanocarpa* (A. Nels.) Sarg.) extends throughout Colorado, commonly along streams and the bottoms of gullies, but occurring in dense stands on hillsides in some instances. The fall colors shown by this plant vary from bright yellow and yellowish-green to yellow-orange and brilliant red. The wild plum (*Prunus americana* Marsh.) occurs also primarily on the plains and foothills at lower elevations, frequently in dense thickets along or near streams, but also in clusters on hillsides. In some years this plant adds patches of gay color to the landscape, generally with yellows but grading into rosy pink and scarlet at times. The pin cherry (*Prunus pennsylvanica* L. var. *corymbulosa* (Rydb.) Wright) also enters this area in limited numbers, occurring almost always along stream banks, where its brilliant red leaves in the fall are in bright contrast to the yellows of the birches, mountain-maples, and hazel-nuts of the streamside habitat.

The commonest birch in Colorado is the western red birch or water birch (*Betula occidentalis* Hook., also referred to as *Betula fontinalis* Sarg.) where it occurs in the mountainous parts of the state as a streamside plant primarily. Quite regularly it can be counted on to produce a yellow color in its leaves varying from dull yellow in some years to a brilliant clear yellow in others, these colors contrasting with the reddish-brown of the bark. The canoe birch (*Betula papyrifera* Marsh.) is extremely rare in Colorado. *Betula glandulosa* Michx., the bog birch or scrub birch occurs in the mountains of Colorado, where it is particularly spectacular as the plant which brings splendid golden color to wet, boggy areas, extending all the way to timberline. In the Subalpine Zone it is the

single most showy plant in autumn, and in the high mountains of Colorado it can be found at 11,000 feet or above providing a brief splash of color just before the early fall snows arrive. Beaked hazelnut (*Corylus cornuta* Marsh.) occurs along the stream banks in canyons of the eastern foothills of Colorado where it provides a brilliant yellow accent in the fall.

Various species of hawthorn or thorn-apple (*Crataegus* L. spp.) occur in the Centennial State under consideration here. Several show restricted distribution, a few are widely scattered, but in sufficient numbers they provide fall coloration of various shades of yellow to brownish; on occasion some individuals will show pink to reddish leaves. A number of kinds of wild rose (*Rosa engelmannii* S. Wats., *Rosa acicularis* Lindl., *Rosa woodsii* Lindl., and others) are widespread and they provide a colorful accent as low shrubs, frequently abundant along roadsides in the mountains, often in quite dense stands. The lovely pink and red colors of their leaves, and the bright shades of red and reddish-orange shown in their persistent fruits are locally very prominent. The shrubby cinquefoil (*Potentilla fruticosa* L., also known as *Dasiphora fruticosa* (L.) Rydb. or *Dasiphora fruticosa*) is common in the mountains as a shrub up to three feet in height in full sun especially on slopes or rocky cliffs. This plant frequently displays a brilliant yellow leaf color in fall.

The Waxflower or Cliffbrush (*Jamesia americana* T. & G.) is a charming shrub found in the mountains of Colorado where it inhabits slopes of canyons and rocky outcroppings. This strictly western member of the hydrangea family provides some of the most unusual shades of color to be seen in the fall, when its leaves show a soft rosy-pink shading through orchid and lavender to dark red.

Plants of the little shrub known as broom huckleberry (*Vaccinium scoparium* Leiberg) occur in masses as a ground cover, not more than one foot in height, in the upper elevations of the mountains near timberline, in the shade of spruces and firs and up to 11,500 feet in Colorado. The very small leaves of this plant turn a bright red, often making surprising masses of rich color. The tiny, red, edible fruits add to the effect.

The two species of mountain mahogany (*Cercocarpus montanus* Raf. and *C. ledifolius* Nutt. ex T. & G.) form a dense chaparral belt in very extensive areas on mesas and lower foothills in this state. By their very abundance they are noticeable for the greenish-bronze to reddish color of their fall foliage. At the same time the elongated, plumose styles of the fruits, which may range from six to ten cm. in length will give a mass of these large shrubs a distinctive furry appearance.

A number of plants contributes to autumnal coloration especially through the brilliant hues of their fruits. Among these are the native mountain-ash (*Sorbus scopulina* Greene) which produces red-orange fruits very abundantly in certain years, but which also has colorful yellow leaves; the red-berried elder (*Sambucus pubens* Michx., also known as *Sambucus racemosa* L. ssp. *pubens* (Michx.) House); a number of species of snowberry (*Symphoricarpos* Duhamel spp.) which are attractive because of their persistent white fruits; and kinnikinnik or bearberry (*Arctostaphylos uva-ursi* (L.) Spreng.) a very widespread, creeping groundcover plant with evergreen leaves through which can be seen the scarlet berries.

The traveler in the mountains in autumn will be surprised to find a large genus of plants known as rabbit-brush (*Chrysothamnus* Nutt.) whose members may be shrubby, or only partly shrubby (with only the base of the stems being woody) providing through the brilliant

golden color of their flowers in the late summer and fall an important component of the autumn color in these areas. Because these plants tend to increase on overgrazed land, it is possible to observe quite commonly vast seas of gold in the areas where they have become enormously abundant, often a truly spectacular sight.

It should be pointed out that undoubtedly still other woody plants contributing to autumnal coloration in Colorado could be mentioned. However, the major ones have been listed. An observation of considerable interest is that the plants contributing the greatest *quantity* of fall color in this state are in one genus, *Populus*; and in that genus *P. tremuloides* accounts for most of the golden splendor enjoyed by hundreds of thousands of persons nearly every year. Another point of interest is that by contrast, in the Midwest, East, and Northeast numerous woody species contribute many shades of color to the autumn spectacle.

### Time of Color Change

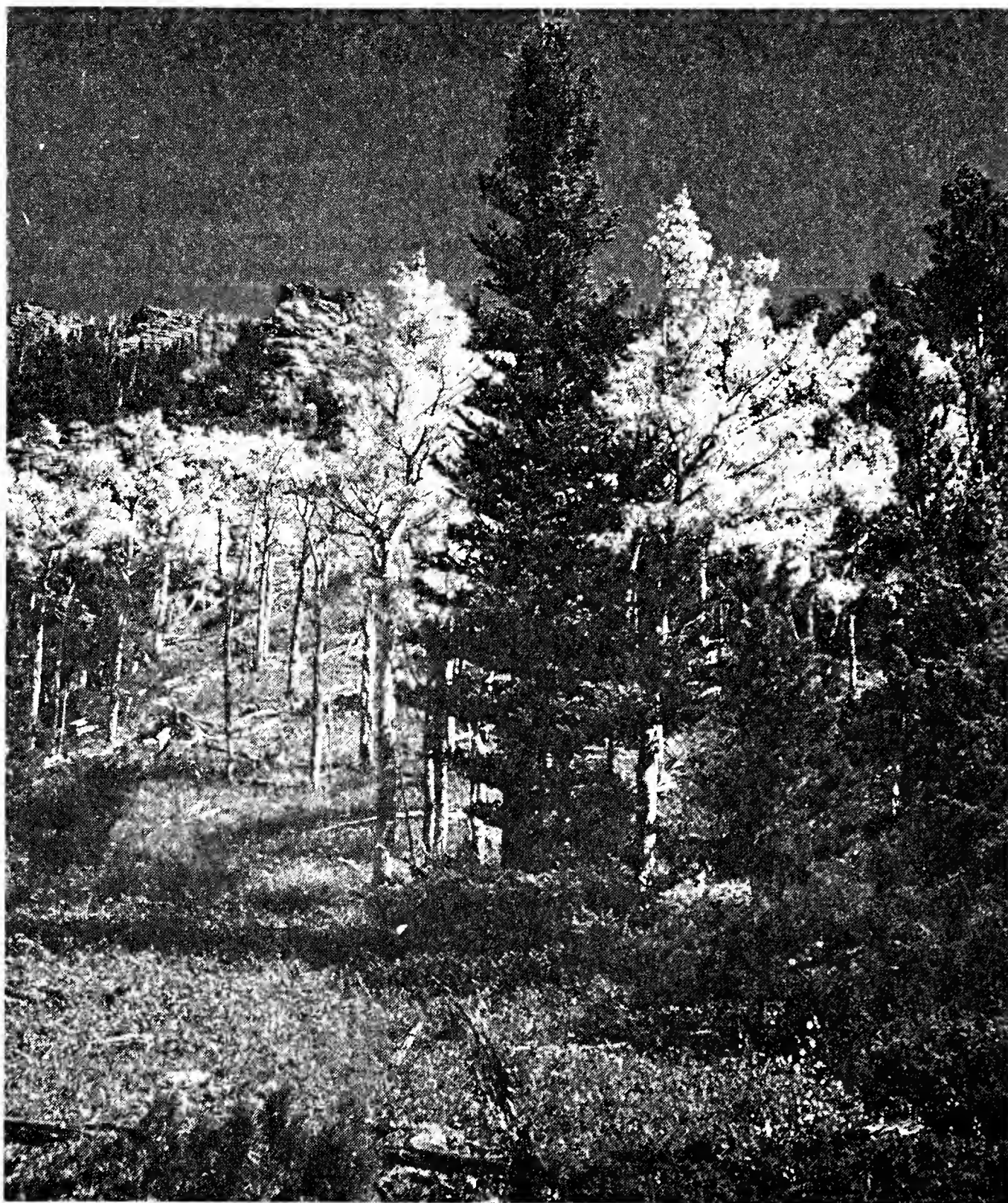
Color changes in the quaking aspen in Colorado's high country follow the pattern of the cooling of the summer temperatures, basically. For that reason they take place first at the higher altitudes in the northern part of the state and gradually move to lower elevations, and southward in direction through a period of several weeks, from approximately mid-September to mid-October or a little later. It has been observed that the dates of color change will not be at exactly the same period in any one place each year, and that variation from year to year may be as much as ten days or two weeks in either direction from what might be called a hypothetical average date for any particular area. In northern Colorado at high altitudes the gold may appear in the aspens as early as the first week in September, and it may still be



visible as late as the third week in October in the southernmost part of the state. In some years the color may be average or mediocre in intensity, while in other years it may show spectacular brilliance. It is known that a number of factors interacting are responsible for the intensity of the color. Some of these are the amount of moisture during the summer months, the amount of water and sugar in the leaves, the date of the earliest cold and frosts, and the severity of the temperature at the time of the earliest frost or freeze. An early unseasonal snowfall will often cause the leaves to die

quickly, blacken and fall from the trees without going through color changes. A light early snowfall *not* accompanied by below average temperatures for the date, may not kill the leaves or speed up the biological processes to the extent that gradual color change is prohibited. Viewing golden aspen leaves which have just been sprinkled with the season's earliest snow, against the incredibly deep blue sky while brilliant sunshine passing through the leaves casts a golden glow on everything below, is a heady experience impossible to blot out of the memory.

Aspen and Evergreens



## Where To Go To View The Aspens?

In Colorado it is difficult to visit an area lying between 8,000 and 10,000 ft. elevation above sea level from mid-September to mid-October without finding glorious aspen color somewhere, in most years. But some areas are better than others, and those listed below are suggested by *COLORADO RECREATION GUIDE*<sup>1</sup>:

1. Squaw Pass and Mount Evans, lying west of Denver and south of Idaho Springs.
2. Steamboat Springs Area, Elk River to the north and Buffalo Pass to the east.
3. Independence Pass, between Twin Lakes and Aspen.
4. Maroon Bells Area and Snowmass Wilderness Area near Aspen.
5. Cottonwood Pass between Buena Vista and Taylor Park.
6. Peak to Peak Highway between Estes Park and Idaho Springs.
7. The road between Divide and Cripple Creek (Colo. 67).
8. Lizard Head Pass between Telluride and Dolores (Colo. 145).
9. Area around Platoro Reservoir, south of Del Norte and west of Conejos.
10. Road between Gunnison and Crested Butte (Colo. 135).
11. Slumgullion Pass between Lake City and Creede (Colo. 149).
12. Boreas Pass between Breckenridge and Como.
13. White River Plateau Area between Buford and New Castle.
14. Cochetopa Pass, between Saguache and Gunnison.
15. Trail Ridge Road, Rocky Mountain National Park.
16. Bear Lake Road, Rocky Mountain National Park.
17. Guanella Pass between Georgetown

and Grant.

18. Corona Pass between Rollinsville and Fraser.
19. Road between Nederland and Fourth of July Campground in Roosevelt National Forest.

<sup>1</sup>Published by Recreation Guides Inc., P. O. Box 215, Commerce City, Colorado 80022.

In addition to the areas listed above reached by automobile, autumnal coloration may be viewed by hiking and backpacking into various Wilderness and Wild Areas among which are: Flat Tops Wilderness, Gore Range-Eagles Nest Wild Area, Indian Peaks Recreation Area, Lost Creek Scenic Area, La Garita Wilderness, Mt. Zirkel Wild Area, Rawah Wilderness, San Juan Primitive Area, Uncompahgre Primitive Area, Upper Rio Grande Primitive Area, West Elk Wild Area, and Wilson Mountains Primitive Area. In addition there are several State Parks and National Forest Areas not included in the above lists. An interesting new development is making it possible for the public to see the colorful aspen displays by means of the summer and fall use of the winter recreation areas' ski lifts. Autumn ski lift rides are now available at Berthoud Pass, Aspen, Vail, and numerous others of the winter sports areas in Colorado.

There are innumerable roads into the "high country" which are negotiable only by four-wheel-drive vehicles, and countless trails for hikers and backpackers which reveal views of incomparable beauty not available to those who are inseparable from their conventional-type automobiles. One serious defect in listing roads and areas as has been done above is that a great many areas, locally known and equally spectacular are left out quite innocently. There are so many places to view autumnal coloration in this great Rocky Mountain State, that justice can be done to only a very few! The writer is aware that whole mountain ranges have not been mentioned in detail.

# THE CLEMENTS IN COLORADO



Moras L. Shubert, Ph.D.

As we reminisce during our Bi-Centennial Year, and more especially our Colorado Centennial Year, it is good for us to think about early contributors to our understanding of the vegetation of the local mountains and plains. But how many can remember Dr. Frederic E. Clements and his wife Dr. Edith S. Clements? All too few Coloradoans got acquainted with these internationally famous botanists who came to Colorado for their research activities every summer from around 1899 until 1941.

First discovering the tremendous potentialities of the Pikes Peak area for ecological research when they came on a honeymoon trip with a group from Lincoln, Nebraska, they made annual pilgrimages to the place which became the Alpine Laboratory until their retirement at the beginning of World War II. Dr. Frederic, at that time Professor of Plant Physiology at the University of Nebraska, noted that within a small area there were all of the climates one could find between the Gulf of Mexico and the Arctic Circle. Their center of operations was a cabin above Manitou in Engelmann Canyon on the cog railroad at the first station, Minnehaha.

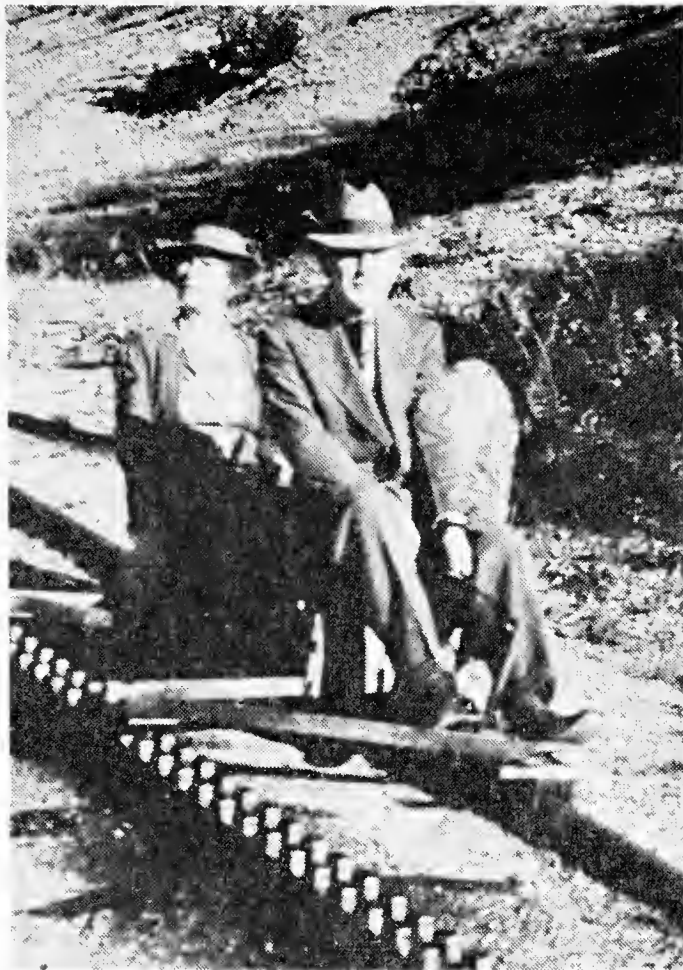
Having only personal funds to support their field research (this was long before the day of grants of funds for such purposes), they were limited in what they could do. Yet, each summer they would come, bringing with them undergraduate and graduate students and young faculty members, all of whom presumably came

at their own expense. The primary effort was to learn how the environmental differences from plains to tundra affected the physiological and structural modification of plants.

It is rather amusing that Dr. Frederic hesitated in acceptance of a position offered him as Professor of Botany and Chairman of the Botany Department at the University of Minnesota in 1907 because he hated to leave his native Nebraska grasslands and move still farther from the Rockies. His wife said "But Frederic, think how the larger salary would help our Alpine Laboratory!" That was the stimulus which caused him to go to Minnesota where he stayed, doing very productive work there in all branches of botany including the classic, *Genera of Fungi*, until 1917. In that year the Carnegie Institution of Washington sought him out to be Research Associate in Ecology. From that time on he never taught formal college courses, but followed his conviction that ecology should be studied only in the field. I have no idea how many young botanists and ecologists, including me, had their understanding broadened by hearing him speak of his observations and philosophy right out in the field, but there must have been many hundreds. Some, more fortunate than I, were able to spend one or more whole summers working under his tutelage.

During the quarter of a century that he was supported by the Carnegie Institution more cabins were built and sophisticated laboratory equipment installed in the laboratory, permitting more people to





The Clements

work and to do more precise measurements. The "transplant gardens" were established at three altitudes, from Windy Point on the tundra southwest of the peak (13,000 feet), and at Minnehaha (8,000 feet), to the Plains garden (6,000). Here they could grow plants of identical genetic make-up by vegetative propagation, in each of the three environments. I was much impressed when I saw *Hymenoxys grandiflora*, Parker, sometimes called "old man of the mountain", normally from 3 to 30 centimeters tall on the tundra growing to over 100 centimeters high in the plains gardens, and likewise *Mertensia alpina*, G. Don, "alpine bluebell" which under the best conditions of alpine meadows grows to about 20 cm. standing 45 cm. tall in the plains garden. Growth, as might be expected was intermediate at the foothills station.

The results of their studies showed many things. One, that physiological activities increase in warmer, longer seasons as one goes down in altitude and

the reverse as one goes up; two, most species cannot long survive such drastic changes in environment, but rather are naturally limited to the environment in which they have evolved. As to survival, I could find only one species from a lower altitude surviving in the alpine garden when I examined it in 1962, and that was a grass, *Danthonia* Lam. & D.C. sp. from the foothills. It was, indeed, surprising to find most of the plot-markers, wooden stakes, still standing after some 20 years of abandonment, but this further emphasized the fact that only native alpine plants were able to occupy these plots.

From these years of research there and elsewhere the Clements wrote many books and journal articles on subjects ranging from mycology to taxonomy to ecology. My first awareness of Dr. Frederic was when I found the library copy of Pound and Clements, *Phytogeography of Nebraska*, published in 1898. I was so thrilled with their beautiful descriptions of the vegetation



with which I was most familiar, along the eastern edge of Nebraska, that this was probably the turning point in my own education.

Most of the "ecologist's" writings (his wife always called him that and referred to herself as "the artist") were highly technical. Perhaps his most famous one was "Plant Succession" published in 1916, in which he stated in exhaustive detail the conditions which cause community succession and what the stages are for all major community types in the United States and Canada. Some of his philosophy was controversial, and I think it speaks well for the strength of it that long after his death ecologists argued about it and wrote rebuttals to it!

Seeing the close relationship between vegetation type and regional climate, Clements considered each community to be a superorganism developed as an expression of that climate and that this "organism" grew through successional stages, finally maturing as the *climax* formation. In my opinion, those who could not accept his use of the word "organism" to describe a community were either unable to fully appreciate what we now call an *ecosystem* or else they just took the word too literally. I had no trouble accepting his use of the word when I heard him say it, but a word like "organism" seems to take on a stronger meaning in print. Many have objected to his single climax interpretation also, and have countered with their observation that the "climatic climax" is not always the final result of long-time succession. But Clements, too, saw this and provided what I consider a very neat scale of classification which puts each variant form in its proper place. If soil conditions were dominant over climate (because of unusual textures) the vegetation might seem to be one for a region of moister climate and trees grow where grassland would be true climax. Our well-known Black Forest, generally east

of Monument, Colorado, is an example of such condition, which he called *post-climax*. Conversely, if there is an accumulation of fine material, such as in an old lake-bed, grassland vegetation grows where there seems to be enough moisture to support trees. This is a *pre-climax* condition and exemplified by such areas as South Park. Disturbances by animals, fire, etc. were also taken into account and properly named.

Few, however, could object to another thesis which he developed from the observations of others and by his own studies. This is that vegetation is an accurate indicator of the physical environment, telling us much about past history of a region and what the potential land use should be for the region. He pointed out that since the plants have to stand and reproduce their own species in a more or less fixed location, they tell us better than any measuring device we can invent what the conditions are. Even single species can tell us what the local soil and climate conditions are. This principal of plant indicators has been one of the most valuable tools in applications of ecology to land use planning, and can be used by anyone who observes plants critically.

Undoubtedly, of greatest interest to amateur botanists and field naturalists are several publications co-authored by the two Clements. In 1914 they first published *Rocky Mountain Flowers*, a key to identification with illustrations by "the Artist". This was so popular it went through four reprintings, counting the revised edition of 1928 which incorporated the color chart showing family relationships. This chart was taken from the May, 1927, issue of the *National Geographic Magazine* which included their article with 32 color plates called "wildflowers of the West". Dr. Edith said that issue was a sell-out and she saw youngsters selling copies for from one to five dollars! Another publication of interest for popular reading or reference

is the book, *Flower Families and Ancestors* which in an amusing way tells how the best-known orders and families evolved. This concept, based upon the Besseyan system, is very useful to the serious field botanist. His and her concepts of botany were strongly influenced by the world-renowned Professor Charles E. Bessey under whom both studied and worked while at the University of Nebraska. Another article in the *National Geographic* of August 1939, is "Floral Garlands of Prairie, Plain, and Woodland."

When color film became available, the original Kodachrome, Mrs. Clements soon adapted it to her use for color portraiture of flowers, observing that her transparencies showed the true translucence of petals which she was never able to capture with paint and brush. In 1941 she got me started on color photography by giving me my first role of film before our trip up to Windy Point. So my first color slides were taken on the shoulder of Pikes Peak.

When the Clements retired in 1941 they returned to their Santa Barbara home. Even though officially retired, he continued his ecological research until his death in 1945. They continued for several summers to return to the Alpine Laboratory. That laboratory, on the Colorado Springs watershed, had to be closed and the buildings demolished shortly after World War II. My good friend and also one of the "Clements disciples", Bruno Klinger of Fort Collins, was commissioned by Mrs. Clements to remove the laboratory equipment and the furniture, including her piano, prior to the demolition. We Shuberts were the fortunate recipients of six of the cane bottom chairs from the dining hall, and these are still our favorite dining room chairs and in daily use.

After her husband's death, Mrs. Clements moved to La Jolla where I last visited her in 1967 and got her to

autograph her last publication, *Adventure in Ecology; Half a Million Miles from Mud to Macadam*. She was then 93 and lived until 1971.

Although not so well-known locally as many other botanists and naturalists of the Rocky Mountain region, they put us in debt to them for their contributions to a better understanding of the vegetation of our region.

## REFERENCES

- Clements, Edith S. 1927. Wildflowers of the West. *National Geographic Magazine*, May issue. (Also in Helen Fowler Library as reprint.)
- Clements, Edith S. 1939. Floral garlands of prairie, plains, and woodland. *National Geographic Magazine*, August issue.
- Clements, Edith S. 1960. *Adventures in Ecology: Half a Million Miles from Mud to Macadam*.
- Clements, Frederic E. 1963. *Plant succession and indicators*, Hafner Publishing Company. A reprint of the 1928 edition by another publisher, and a combined and condensed edition of the two separate books of 1916 and 1920, respectively.
- Clements, Frederic E. and Edith S. 1928. *Flower families and ancestors*. H.W. Wilson Company.
- Clements, Frederic E. and Edith S. 1928. *Rocky Mountain flowers*. H. W. Wilson Company.
- Gould, Jane. 1976. Personal interviews with Miss Gould who is a niece of Frederic E. Clements. Assistant Archivist, Penrose Library, University of Denver.
- Pound, R. and Clements, Frederic E. 1898. *Phytogeography of Nebraska*, University of Nebraska.
- Shantz, H. L. 1945. Frederic Edward Clements. *Ecology* 26 (4):317-319. This author, also of international recognition, contributed greatly to the understanding of ecology in our area. Noteworthy is his publication in 1911, "Natural vegetation as an indicator of the capabilities of land for crop production in the Great Plains area", *Bulletin 201* of the Bureau of Plant Industries. Had we followed his recommendations much of the "dust bowl" would have remained under permanent grassland and the tragedy of the 1930s would have been avoided.

# FOCUS ON

## COCCOLOBA UVIFERA

### Sea Grape

in the  
Boettcher Memorial Conservatory

Peg Hayward

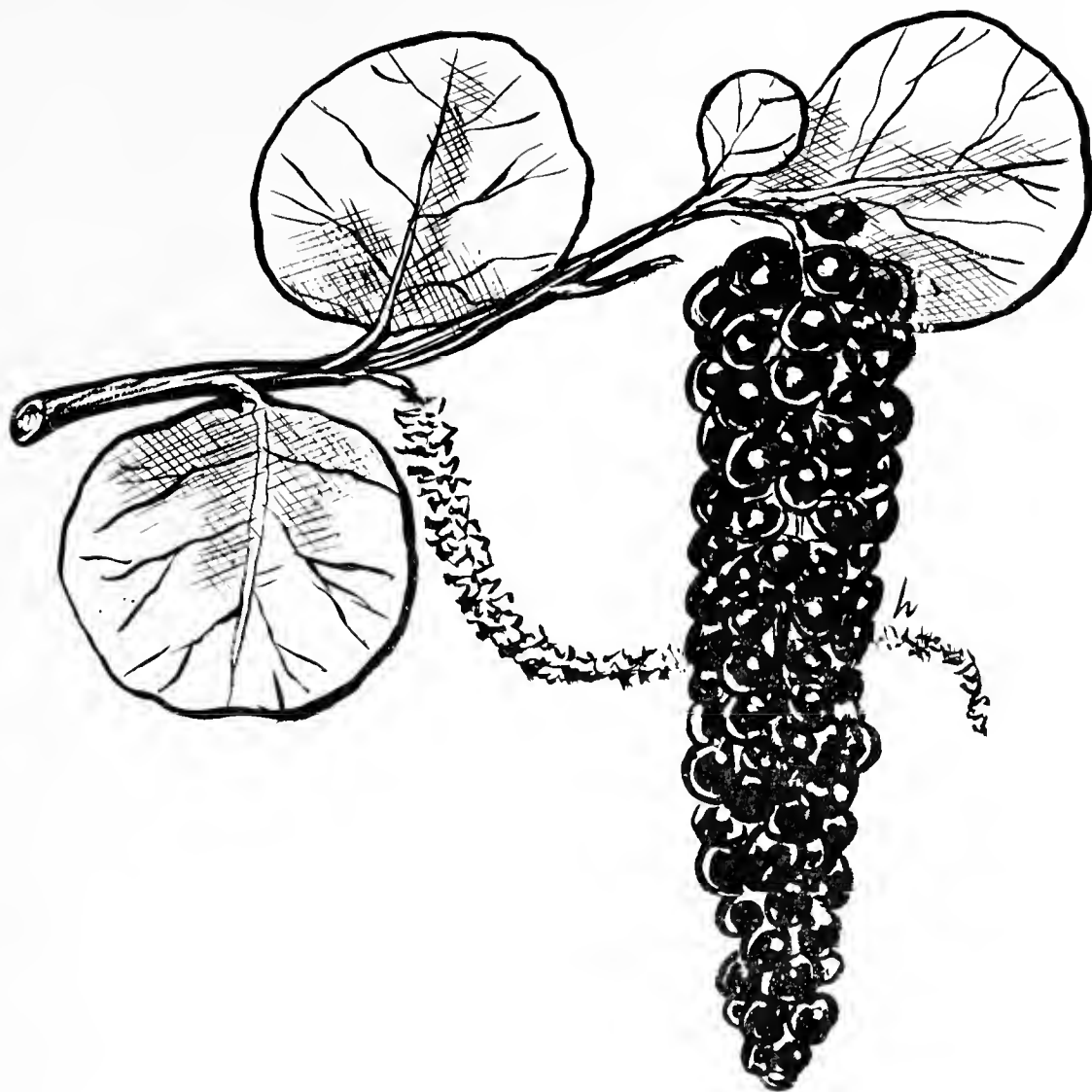
*Coccoloba uvifera* (L.) sea grape, is an inhabitant of sandy seashores. It is native to tropical America, especially south Florida and the West Indies region.

*Coccoloba* can be recognized by botanists as a member of the *Polygonaceae*, buckwheat family, from its peculiar clasping stipules, *ocreae*, even without studying its flower. There are 14 other *Coccoloba* species.

The sea grape may be from 15 to 25 feet in height though often low-growing in clumps along beaches with the branches spreading close to the ground. If the tree is not crowded it produces a rounded head. The handsome leaves are conspicuously stiff and leathery, broadly heart-shaped, wavy margined, and glossy. They are often 5 inches long by 7 inches wide, the midrib and veins are red and the petioles short. The tree is evergreen but presents colorful phases; the old leaves redden before they fall and the silky young leaves which replace them are copper color before turning green. During

the early colonial wars, when paper and ink were scarce, the Spaniards used the thick leathery leaves of the sea grape like paper. Messages were scratched into the leaf surface. The scratches would turn white and remain permanently.

Numerous white fragrant flowers appear on slender spikes above the leaves. They are not particularly showy. The spikes are erect in flower, but as they mature, the weight of the densely clustered grape-size fruit drags the spike down to a pendant position. When ripe, the pear-shaped fruits are reddish-purple dotted green. The berries, 9 or more in a raceme, are about 1/2 inch long. They contain a thin layer of sweetish acid pulp surrounding a woody stone. They are edible raw, but rather troublesome to eat because of the scarcity of flesh. Nevertheless, the fruit is quite commonly eaten out-of-hand and yields excellent juice, syrup, jelly, and wine. The nut is roundish, with a short, sharp point on top and vertical wrinkles.



Sea Grape (*Coccoloba uvifera* (L.) L.)

The sea grape is becoming increasingly popular in tropical countries as an ornamental and a windbreak near the sea. It is tolerant of ocean spray and will grow in almost pure sand. The tree's crooked habit of growth adds to its appeal as an ornamental.

The wood of *Coccoloba* is dark brown, heavy, and takes a good polish, so it is prized for cabinetwork. The beautifully grained wood of the *Coccoloba* is said to withstand prolonged immersion in hot, soapy water without damage and is, therefore, used for knife handles, inlays, turnery, and umbrella handles.

In Jamaica kino, a gum obtained from the wood and bark of *Coccoloba*, was

formerly of importance in medicine and in tanning and dyeing. The wood when boiled gives a reddish color.

*C. uvifera* and also *C. uvifera* cv. *aurea*, which has a variegated leaf, may be seen in the Boettcher Memorial Conservatory.

#### REFERENCES

- Baily, L. H. *The Standard Cyclopedia of Horticulture*. New York: The Macmillan Company, 1935
- Degener, Otto. *Tropical Plants the World Around*. Poughquag, New York: Otto Degener, 1945
- Morton, Julia F. *Some Useful and Ornamental Plants of the Caribbean Gardens*. Coral Gables, Florida: Parker Art Printing Assn., 1955.
- Pesman, Walter M. *Meet Flora Mexicana* Globe, Arizona: Dale S. King, 1962





## CENTENNIAL TREE WATCHING

E. Alan Rollinger

As we celebrate this historical year, those of us with an interest in plants can further enjoy this occasion by visiting the old and unusual trees in the Denver area.

The trees of Denver are unique. With the exception of some cottonwoods, willows, and boxelders along rivers and streams, the wide variety of trees we enjoy were planted by people. By trial and error, trees once thought not hardy here have been established.

In 1933, Mrs. Katharine Bruderlin Crisp wrote a master's thesis on the trees of Denver. In 1968-69, I conducted a personal survey of the Denver area in

search of "unusual trees." This study was published by the CSU Extension Service through Dr. James Feucht's office at Denver Botanic Gardens. At that time I did not know of the Crisp study. A comparison of the two and what changes have occurred in 40 years is interesting. While some of the trees listed by Mrs. Crisp are gone, many have grown to become notable specimens.

Among the trees which we both noted are some fine specimens which would make an interesting tour for those interested in Denver's trees. To begin with the large-leaved sycamores which line Marion Parkway north of Washington

Horse Chestnut (*Aesculus hippocastanum* L.)



Park planted by the Denver Parks System and mentioned by Mrs. Crisp have grown to impressive size. Next to the Eugene Field House in Washington Park remains an outstanding example of yellow buckeye (*Aesculus octandra* Marsh.). Both the yellow buckeye and Ohio buckeye seem to do well in Denver and should be more widely planted. Prior to Mrs. Crisp's study, an avenue of horse chestnuts (*Aesculus Hippocastanum* L.) was planted west of the central pool in City Park. Only two remained at the time of her study and those two are still there and doing well. The largest horse chestnut noted by Mrs. Crisp at 2419 Federal Boulevard measured 14.3 inches in diameter and 41.6 feet high; it has more than doubled in size today. As far as I know the four sugar maples at 29th and Wadsworth mentioned by Mrs. Crisp are still there. It is interesting to note that the sugar maple she placed "near Arvada" is probably the one in the 5200 block of Marshall Street in Arvada which I included in my study.

Forty years later when I surveyed the Denver area in addition to the above trees mentioned by Mrs. Crisp, I observed many more uncommon trees growing here. In addition to the Denver parks, among my favorite areas for tree watching are Fairmount and Crown Hill Cemeteries. Fairmount is the closest we have to a mature arboretum. There you can find numerous species of oak including red oak (*Quercus rubra* L.), scarlet oak (*Q. coccinea* Muench.), pin oak, (*Q. palustris* L.), bur oak (*Q. macrocarpa* Michx.), English oak (*Q. robur* L.), white oak (*Q. alba* L.), and swamp white (*Q. bicolor* Willd.). There are specimens of additional species including Norway maple, sycamore, and numerous conifers. Crown Hill is not quite as old but has fine examples of uncommon trees including shingle oak (*Q. imbricaria* Michx.) and a Japanese larch (*Larix leptolepis* Murr.).

A little out of the way for Denverites



*Quercus macrocarpa* Michx.

but worth the drive is Green Mountain Cemetery in Boulder. Here you will find a good collection of oaks, maples, and even an American birch (*Fagus grandifolia* Ehrh.).

Among my favorite individual trees which I drive out of my way to check on are the following: 1) the exceptional sugar maple in the 2300 block of South Colorado Boulevard on the east side of the street, 2) the largest European birch (*Fagus sylvatica* L.) in Denver in the 1300 block on East Third, 3) the majestic eastern white pine in the 500 block of Dahlia reaching at least 80 feet tall, and 4) a glorious sight in the spring, one of the biggest eastern redbud trees in Denver at 38th and Everett.

While we are visiting these trees and looking back in this centennial year, we should realize these beautiful specimens would not be here for our enjoyment if people years ago had not been willing to experiment and not always choose the "fastest growing" species. Planting oaks for one's children certainly would be a good example of a fine, unselfish act for the immediate future and the next 100 years.

## Address Changes

Please report changes of address to *The Green Thumb*. Single mailings and returned copies cost almost a dollar each.

# COLORADO AUTHORS HONORED

Solange Gignac

An autograph party held at Horticulture Hall on June 17, 1976, from 2 to 4 p.m. honored Colorado authors of botanical and horticultural books. The authors autographed their most current works as well as previously published volumes. The following list denotes the current work:

Anderson, Berta. *Wild Flower Name Tales*. Colorado Springs, Century One Press, 1976. 6.95. Reviewed in *The Green Thumb*, v. 33, no. 2, summer 1976. Reviewed in *Trail and Timberline*, June, 1976.

Bliss, Anne. *Rocky Mountain Dye Plants*. Boulder, author, 1976. 6.00. To be included in book list of The Herb Society of America, summer issue.

Burgess, Lorraine Marshall. *The Garden Maker's Answer Book*. New York, Association Press, 1975. 6.95. Reviewed in *American Horticulturist*, v. 55, no. 3, June 1976.

Huddleston, Sam and Michael Hussey. *Grow Native: Landscaping with Native and Apt Plants of the Rocky Mountains*. Fort Collins, Colo., Apple Tree Image, 1975. 6.50. Reviewed in *The Green Thumb*, v. 33, No. 1, spring 1976.

Kelly, George W. *Trees for the Rocky Mountains*. Cortez, Colorado, Rocky Mountain Horticultural Publishing Co. 1976. 3.50. Mr. Kelly has another book, *A Way of Beauty* due to be published in the latter part of 1976.

Lanham, Uri. *The Enchanted Mesa*. Boulder, Colorado, author, 1974. 4.95. Reviewed in *Garden Journal*, v. 26, no. 2, April 1976.

Milstein, Dee and Gene Milstein. *Water, Light and Love*. Lakewood, Colorado, Applewood Seed Co., 1976. 3.95. Reviewed in *The Denver Post Roundup*, 30 May 1976.

Nelson, Ruth Ashton. *Plants of Zion National Park*. Springdale, Utah. Zion Natural History Association, 1976. 8.00 pb, 10.00 hard cover. To be reviewed in *The Green Thumb*, v. 33, no. 4, winter 1976.

Weber, William A., Ph.D., *Rocky Mountain Flora* 5th Edition, Boulder, Colorado, Colorado Associated University Press, Fall 1976.

Weber, William A., Ph.D., Editor, *Theodore D. A. Cockerell; Letters from West Cliff, Colorado, 1887-1889*, Boulder, Colorado, Colorado Associated University Press, Fall 1976.

Due to previous commitments, Mrs. Bliss and Mr. Lanham were not able to attend.

Horticulture Hall had been beautifully decorated by the greenhouse staff. Each author with his/her book(s) was at a separate table and each was accompanied by a library volunteer. In spite of one of the typical June downpours occurring immediately before the event was to begin, many people came to greet the authors, and to purchase autographed copies.

# DENVER BOTANIC GARDENS, INC.

A Non-profit Organization

## OFFICERS

Mr. John C. Mitchell	President
Mr. Edward T. Connors	Vice-President
Mr. Richard A. Kirk	Vice-President
Mrs. James J. Waring	Vice-President
Dr. Moras L. Shubert	Secretary
Mrs. Frank B. Freyer, II	Assistant Secretary
Mr. Alexander L. Kirkpatrick	Treasurer

## STAFF

Dr. William G. Gambill, Jr.	Director
Mr. Glenn Park	Assistant Director
Mr. Andrew Pierce	Conservatory Superintendent
Ms. Beverly M. Nilsen	Botanist-Horticulturist
Mr. Dudley H. Schwade	Botanist-Horticulturist
Miss Margaret Sikes	Education Director
Ms. Solange Gignac	Librarian
Miss Lucy Crissey	Honorary Librarian
Dr. D. H. Mitchel	Honorary Curator of Mycology
Mrs. J. V. Petersen	Honorary Editor of The Green Thumb
Dr. Helen Zeiner	Honorary Curator of the Kathryn Kalmbach Herbarium

## ILLUSTRATION SOURCES

Front cover and pages 90, 94 — Photos by Berta Anderson  
Outside back cover and pages 69, 72, 75 — Bill Anderson  
Page 71 — Photo courtesy Broadview Acres Nurseries  
Page 74 — Photo from *The Green Thumb* file.  
Pages 77, 79 — Photos courtesy of Josephing Robertson  
Page 80 — Drawing by Pauline Roberts Steele  
Pages 84, 85 — Drawing Courtesy Western History Department, Denver Public Library  
Pages 86, 88 — Photos courtesy Western History Department, Denver Public Library  
Page 97 — Photo courtesy of Moras L. Shubert  
Page 101 — Drawing by Phil Hayward  
Pages 102, 103 — Photos courtesy of E. Alan Rollinger

Correction of Sources in Summer, 1976 Issue:

Pages 58, 59, 60 — Photos courtesy The Blandford Press Ltd.



# *The Green Thumb*

DENVER BOTANIC GARDENS  
909 YORK STREET  
DENVER, COLORADO 80206

NON-PROFIT  
ORG.

U.S. POSTAGE

PAID

Permit No. 205  
Denver, Colorado

DO NOT FOLD

ADDRESS CORRECTION  
REQUESTED RETURN  
POSTAGE GUARANTEED



The Krohn House

DENVER BOTANIC GARDENS  
DENVER, COLORADO

This is a non-profit  
organization supported by  
municipal and private funds.

Denver Botanic Gardens maintains a collection of living plants, both native and exotic, for the purpose of acquiring, advancing and spreading botanical and horticultural knowledge.



# *The Green Thumb*

**VOL. THIRTY-THREE, NUMBER FOUR**

**WINTER, 1976**



## **THE COVER**

**Grays Peak and Torreys Peak.**

## **THE GREEN THUMB**

**WINTER, 1976**

**VOL. THIRTY-THREE, NUMBER FOUR**

### *Editorial Committee*

**Mrs. Gilberta T. Anderson**  
**Dr. William H. Anderson, Jr.**  
**Mrs. D. A. Andrews-Jones**  
**Ms. Suzanne Ash**  
**Mrs. Paul A. Bloustein**  
**Mrs. William H. Crisp**  
**Dr. William G. Gambill, Jr.**  
**Mrs. George H. Garrey**  
**Mrs. Phil Hayward**  
**Ms. Solange Gignac**  
**Mrs. Robert M. Kosanke**  
**Mrs. J. V. Petersen, *Chairman***  
**Dr. Moras L. Shubert**  
**Miss Margaret Sikes**  
**Pauline Roberts Steele**  
**Dr. Janet L. Wingate**  
**Dr. Helen Marsh Zeiner**

Published by **Denver Botanic Gardens, 909 York Street, Denver, Colorado 80206.**

Sent free to all members of the organization. Junior membership \$3.00, Regular \$10.00, Participating \$30.00, Contributing \$50.00, Supporting \$100.00, Corporation \$200.00, Patron \$500.00, Life (single contribution) \$1,000.

By becoming a member of Denver Botanic Gardens you will receive *The Green Thumb* and the monthly *Newsletter*. You will also have unlimited access to the use of the books in the Helen K. Fowler Library, located in Boettcher Memorial Center at 1005 York Street.

For further information write to Membership Chairman, Botanic Gardens House, 909 York Street, Denver, Colorado 80206, or call 297-2547.

Copyright 1976 by Denver Botanic Gardens, Inc.

# The Green Thumb

Copyright 1976

William H. Anderson Jr. Ed.D.

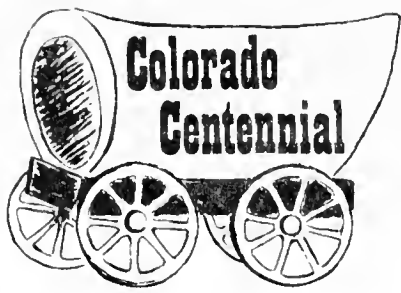
Gilberta T. Anderson

Editors

## WINTER, 1976

Botanists on the Colorado Peaks <i>Josephine Robertson</i> .....	106
Roses to Grow in Denver Gardens <i>Joan G. Franson</i> .....	110
Horticultural Therapy <i>Kathleen Neer</i> .....	115
The Krohns — A Helpful Influence <i>Virginia McConnell Simmons</i> .....	119
Exotics of Colorado — Potato <i>Helen Marsh Zeiner</i> .....	121
People Are Generous <i>Andrew Pierce</i> .....	124
The Chatfield Arboretum <i>Newell M. Grant</i> .....	127
Rhododendrons in Colorado Gardens <i>Panayoti Peter Callas</i> and <i>Ray Radebaugh</i> .....	130
Looks at Books — <i>Plants of Zion National Park</i> <i>Gilberta T. Anderson</i> .....	134
Index, Annual Report 1975 .....	135
Subject Index, 1976 .....	135
Author Index, 1976 .....	136





# BOTANISTS ON THE COLORADO PEAKS

Josephine Robertson

As we travel through Colorado we come upon mountains named for several famous pioneers in natural science. Because their names are so familiar through our reading, we have the pleasant feeling of meeting old friends. Furthermore, we find that the story of their naming reveals a network of friendship among the early scientists. Many of them were doctors of medicine since their reliance on "physic gardens" before the day of synthetic drugs made a knowledge of botany imperative.

James Peak, near Rollinsville, reminds us of Dr. Edwin James (1797-1861) a contemporary of the famous Dr. John Torrey. At the age of twenty-three, James was invited to accompany Major Stephen H. Long on his second western expedition to replace an older surgeon-naturalist who had died at the end of the first summer. It was an expedition that called for plenty of vigor. Travelling by horseback James went with Long from Missouri, leaving in late April 1820, across Nebraska and entering Colorado in late June. There were twenty in the party, twenty-eight horses and mules. His journal tells of Indians, storms, heat, insects, and torrential rains from which they had little protection for themselves or for his specimens. Yet his enthusiasm never flagged. Near Palmer Lake they met for the first time masses of our beautiful blue columbine named by James *Aquilegia caerulea* James. They camped near Pikes Peak, which Pike had visited in 1806 but never climbed. July 14 was a memorable day in American botany because on that day James, with two companions, climbed the 14,110 foot peak and were the first to discover and collect the brilliant tiny flora that bloom at that altitude. Major Long wanted to name the peak for James, but the name of Pike prevailed.

In the exciting days of botanical discoveries in the 19th century, two men towered as nobly as the mountains named for them. Dr. John Torrey (1796-1873) of Columbia and Dr. Asa Gray (1810-1888) of Harvard will always remain eminent in the history of plant discovery. Their contribution came mainly in identifying the material sent back by the rugged men in the field, who could hardly carry reference tomes and laboratory equipment into the wilds.

Dr. Torrey, trained as a physician, lectured at West Point and Princeton, as well as Columbia, worked for the U.S. Assay office to supplement his income — and inspired many students who became famous. In his spare time he identified the collections of Fremont, Parry, James, and others.

Dr. Asa Gray (1810-1888), fourteen years younger, had studied with Torrey, wrote many text books including the famous "Manual," and also identified collections from the plant explorers. Close friends, Gray and Torrey collaborated on a great work, *Flora of North America* but never finished it. Dr. Gray, who was internationally famous, spent most of his working life in Cambridge where he developed the finest herbarium and library in the country and had an outstanding garden. He spent forty years working on his *Synoptical Flora*.

Gray and Torrey were both experts on western flora long before they ever set foot in the west!



Dr. John Torrey



Dr. Asa Gray

### Grays and Torreys

The peaks near Georgetown had been named in their honor in 1862 by another doctor-botanist, Charles Christopher Parry. He explained it this way:

"In my solitary wanderings . . . . resting at noonday, I naturally associated some of the more prominent peaks with distant and valued friends. To the two twin peaks I applied the names of Torrey and Gray. To an associated peak, a little less elevated, I applied the name of Mt. Engelmann."

By an odd coincidence Gray and Torrey finally saw their peaks in the same year, 1872, but not together. On August 14 of that year. Dr. Gray and a distinguished party including Parry, guests at Georgetown's elegant Barton House, gathered to make the climb up Grays for the formal dedication of the names. At the top there was oratory, singing, praise for Gray's achievements, and generous tribute paid to the absent Torrey.

(One hundred years later, a group from the Torrey Botanical Club of New York came west and led by Dr. William A. Weber, Curator of the Herbarium, University of Colorado Museum, made the same ascent and with suitable ceremonies at the top, commemorated the earlier dedication.)

Dr. Torrey had longed to be present with his friends for the occasion, but he wrote that at 76 he was no longer able to undertake such an expedition. However, just a few weeks later he was sent to California on a government assignment and was able to stop over in Denver. With his daughter and a friend he traveled to Georgetown and arranged for a trip up the mountain. It was late in the season where snow comes early,

but they started by horseback. Part way along, Dr. Torrey realized he could not continue and took shelter in a cabin while the others went to the top. In keeping with his kindly character, he lit the stove and prepared some hot refreshments for the returning party.

His devoted pupil, Dr. Charles Christopher Parry (1823-1890), namer of mountains, was born in England, but came at the age of nine to this country. His interest in western botany may well have been inspired by Torrey's work and publications on Edwin James' collections. He set up medical practice in Davenport, Iowa, but his patients must have often sought their doctor in vain, for there were few years when he was not off on some expedition, either in an official capacity or at his own expense, which was the case when he came to Colorado in 1861. He had his own cabin in Grizzly Gulch south of Bakersville, but wandered widely, collecting some of his specimens around Boulder and Gold Hill. He was a tireless collector and many of his findings went back to Gray for identification. Unfortunately he was not a meticulous recorder of the relevant data. Nevertheless, he kept in touch with all the leaders in his field through correspondence and stirred much public interest through readable newspaper articles. He became so well known that the eminent Briton, Sir William Jackson Hooker of Kew Gardens remarked in 1877 that Parry was "already king of Colorado Botany."

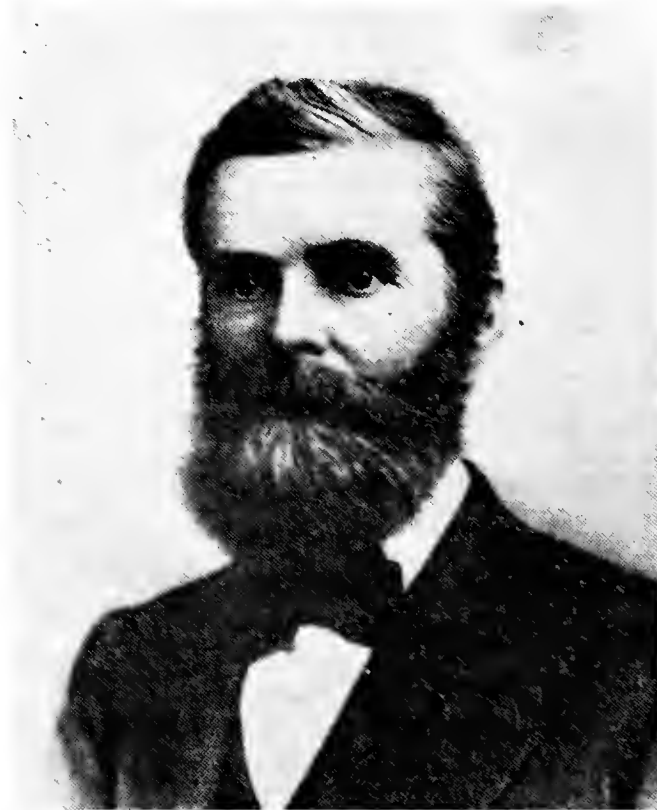
The third peak in the Georgetown trio was named for Parry's friend, Dr. George Engelmann (1809-1884) of St. Louis, but it had previously been named Kelso and so it remained. Parry later gave Engelmann's name to a peak just north of the others.

Engelmann had a large practice and probably spent more time in his office than some of the others, but botany was an absorbing interest. He visited Colorado several times and in 1874 made his headquarters in Empire while he studied the coniferous trees of the region.

He made a lasting contribution through his influence on his wealthy, if somewhat eccentric friend, Henry Shaw. Shaw, English by birth, had a genius for business and had piled up a large fortune by the age of forty when he began looking for new worlds to conquer. Strolling through the magnificent gardens and park of Chatsworth in England he suddenly was seized with the thought that he, too, could use his money for spectacular gardens. It was his scientific friend, Engelmann, who persuaded him



Dr. George Engelmann



Dr. Charles C. Parry

that it would be much more valuable to establish a botanic garden. From this conviction grew "Shaw's Gardens," with greenhouse, library, herbarium, and arboretum, and a professorship in botany at Washington University in St. Louis. From this project, for which Engelmann did extensive traveling, grew the world famous Missouri Botanical Garden.

Asa Gray's suggestion for the first person to be professor of botany at Washington University was Dr. William Trelease (1857-1945) of the University of Wisconsin. Later Dr. Trelease became the first director of the Missouri Botanical Garden. He, too, came to Colorado and collected plants in Ute Pass and above Leadville. Near Georgetown Mt. Trelease commemorates another fine botanist.

When Parry was botanizing here in 1864 he had the company of Dr. Jacob W. Velie (1829-1908) of Illinois whose special interests were birds and shells. He found time to serve as secretary and curator of the Chicago Academy of Sciences. Velie did not rate a mountain, but he helped Parry select a name for one which they climbed while they were camping near Ward. This, they decided, should bear the name of Audubon, the great naturalist, who had died thirteen years earlier. John James Audubon (1785-1851) never set foot in Colorado, but his name which has survived on the mountain, although its appropriateness among the Indian Peaks has been challenged, shows the esteem of his contemporaries for the great artist and ornithologist.

Another name credited to Parry is Mt. Guyot, west of Kenosha Pass, named for Arnold Henry Guyot (1807-1884), a Swiss geologist interested in barometric data and influenced by Louis Agassiz to explore in the new world. He later became professor of physical sciences at Princeton.

Colorado has no mountain named for John Charles Fremont (1813-1890) although this colorful adventurer whose career mixed courage with rashness, fame with disaster, travelled extensively in the state. He made several western expeditions, never with a qualified naturalist along, but because of an interest in science, collected what he could and sent whatever survived the rigors of his journeys back to Gray and Torrey. We have Fremont Pass and Fremont Butte near Akron to carry his name.

Speaking of passes, the next time we enjoy the scenic splendor of Berthoud, we might remember an energetic young Swiss engineer, who came to Golden in 1860 to survey for practical railway routes. Edward L. Berthoud (1828-1908) was closely associated with the beginnings of the School of Mines, yet he, too, was interested enough to make a careful catalogue of plant life in the Denver area and was, even though briefly, the first professor of botany in the state!

The names of these pioneers are immortalized in the nomenclature of the trees, flowers, and grasses which they found or which were named for them and on some of our towering peaks. We are glad that, scattered among the early settlers, soldiers, Indians, and miners, we find honored those courageous men who risked their necks, not for gold or conquest, but to learn about the flora of this rugged state.

## REFERENCES

- Arps, Louisa Ward and Kingery, Elinor Eppich, *High Country Names*, Colorado Mountain Club, Denver, CO, 1966.
- Ewan, Joseph, *Rocky Mountain Naturalists*, University of Denver Press, Denver, CO, 1950.
- McKelvey, Susan Delano, *Botanical Exploration of the Trans-Mississippi West, 1790-1850*, Arnold Arboretum, Harvard University, Cambridge, Mass., 1955.
- Ormes, Robert M., *Colorado Skylines Book I*, Ormes, Colorado Springs, CO, 1967.
- Torrey Botanical Club, *Bulletin*, Jan. 1874, p. 18
- Trelease, William, et als, Eds., *Missouri Botanical Garden*, 1890.



# ROSES TO GROW IN

## DENVER GARDENS

Joan G. Franson

Are you planning to set out a few rose bushes this spring? Here are a hundred and one varieties which have been growing well for members of the Denver Rose Society.

Typically it is the hybrid tea, a high centered bloom growing one to a long stem, which is the rose most people think of first. But there are many other types available. Perhaps the floribunda rose, one which grows from few to several blooms in a cluster, might suit a landscaping need better than a hybrid tea.

A row or bed of miniature roses could be what you did not even know you wanted. These charmers range in height from six to eighteen inches according to variety. For all their petite size they tend to be hardier than most larger roses with some retaining green leaves all winter. Since they are tiny, a rather small area can hold a wide selection of varieties. Just be sure the soil is of loose loamy structure.

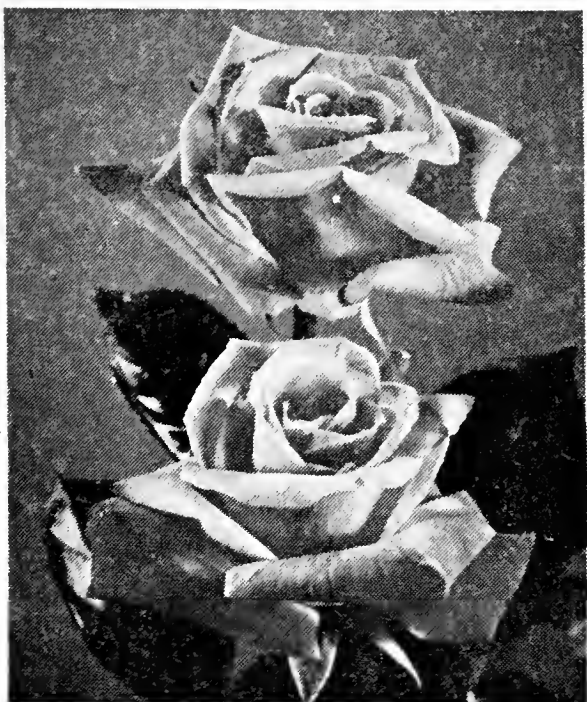
Climbing roses although spectacular when conditions are just right (about two years in four or five) are not really highly recommended in this area. And then there are the old garden or shrub roses to consider. These are hardy roses which bloom each in its own fashion.

When mildew is mentioned there is no need to drop the rose from consideration; just be sure to begin and maintain an adequate program of spraying with Benlate or similar chemical for prevention. Too abundant a spray plan tends to benefit only the manufacturers of chemicals.

For white roses try Pascali, a clean white rose slightly smaller in size than might be expected in relation to its foliage. It is a good bloomer and repeats well. Louisiana is a new introduction which is very full of weather resistant, crisp white petals. Garden Party is a long time favorite — white tinged with pink edges (the pink is more pronounced in cooler temperatures). A cross between Charlotte Armstrong and Peace, it needs to be watched for mildew.

Ivory Fashion is truly a classic floribunda. Its distinctive ivory tint is complimented by golden and maroon stamens when it finally reaches the fully blown stage. It is one not to be without. For nearly continuous fluffy bloom try Summer Snow, a low-growing older favorite, or Iceberg, a slightly taller one with wiry stems.

In miniatures there are so many to choose from — tiniest of all roses on a three to four inch tall bush with blooms from one-fourth to one-half inch across is the unbelievable Si! Next in flower size might come the hybrid-tea-shaped White Angel or abundantly blooming Cinderella. With blooms up to one and one-fourth inches across is Whipped Cream, or pale yellow fading to ivory Easter Morning. And not to be



**Arizona — Grandiflora**



**Perfume Delight — Hybrid Tea**

forgotten is the single Simplex with its exquisite fluffy crown of golden stamens to compliment the five pleated petals.

Resembling a hybrid tea but classed as a hybrid perpetual is Frau Karl Druschki, a cool white beauty, scentless, which blooms well in June and repeats spasmodically through the summer. Nevada is a vigorously growing shrub with white single roses three inches across and growing into an established plant perhaps six feet tall and broad — very hardy. Mme. Hardy is a damask rose, fragrant, pure white and opening its multitude of petals flat to show a green button eye.

In general yellow roses seem to be more difficult to find. Often yellow roses tend to be less resistant to diseases or more prone to winter kill. There are good yellow roses, though, and here are a few from which to choose. King's Ransom is one which quickly comes to mind — a deep yellow which quills back its petals in opening to form star shaped points. Leathery shiny dark green foliage compliments the blooms. It seems that — like the girl with the curl right in the middle of her forehead — you either get an Irish Gold which is very, very good or . . . This rose is a paler yellow with beautiful form and can be quite large.

A tall growing grandiflora is Buccaneer. These medium yellow blooms will be seen well when planted in a back row.

In miniatures Gold Coin has three-fourths to one inch blooms and stays fairly small as a bush. Golden Angel is a large flower and is shaped like a hybrid tea.

Classed as a climber although growing more like a pillar, Golden Showers is worth growing for its shiny foliage alone. It dies back to ground level usually each winter but shoots up to six or eight feet in favored locations each summer. The clusters of medium yellow blooms repeat well.

And for that just right spot, put in Golden Wings, a shrub which can be quite vigorous. The large five petaled blooms are followed by nearly crabapple sized hips. It is a real treasure to enjoy. As the pioneers headed west, they took with them slips of Harison's Yellow, a shrub to be found yet growing by old or abandoned homesites. It blooms but once in early spring.

Peace is the most popular rose in the yellow blend group and has a good reputation. Very large in bloom size, yellow tinged pink into red on the petal edges (color deepens as weather is cooler), it has leathery tough foliage. But I find fault with it for a person who has room for only a very few bushes since it is quite slow to repeat bloom. If you can afford the wait, it is well worth it. Champagne is one I like

because nearly every bloom is just a bit different in color. A high centered flower, it ranges from pinky tinges through buff to tawny yellow — a changling and a delight.

There are some good yellow blend floribundas. Two of the best are Little Darling and Red Gold. Little Darling blooms in clusters from three or four to a dozen or more perfectly shaped round little hybrid tea type blossoms. They vary from pastel tints of cream to pink and gold. Red Gold is a two toned blend which starts nearly all gold and ends nearly all red. The blooms are quite pointed and have good substance.

Mary Adair and Baby Darling are two top apricot blend miniatures. Both are well formed and have good substance on medium sized bushes.

In golden orangey hybrid teas there is Old Timer, a luscious mellow gold with very large flowers showing good high centers. This one really needs good winter protection but is worth the extra fuss. Sutter's Gold is worth growing for its shiny foliage and its heavenly fruity scent. It has pretty tight blooms but it opens very fast. Mojave is veined with color which turns more to the pinky-red orange. It is quite informal in shape.

A tall grandiflora with sturdy foliage is Arizona, a vivid blend of sunset colors on petals with great substance. It repeats in definite cycles — all blooms or all foliage.

In miniatures Mary Marshall is like a tiny Talisman rose, coppery rose on top of petals with a buff yellow reverse on a high centered bloom.

A charming low growing polyantha is Margo Koster, with distinctive inwardly curved petals shaping it into a ranunculus type bloom in a salmon color.

For orange reds the famous Tropicana is a hybrid tea to consider. A medium size bloom, it flames out to catch the eye and repeats well. Fragrant Cloud is a larger rose which is orange red on the inside of the petal and carmine red on the outside of the petal. It is fragrant and has good tough foliage. Gypsy is another good choice in the deep and brilliant orange reds.

Several floribundas in orangey red are good. Each one is quite different from another. Fire King has tight, heavy substance small blooms in good sized clusters on a medium to tall bush. Fusilier, an older favorite, opens its rather flat but very full blooms to show distinctive ruffled or "pinked" edged petals. Sarabande is a low sprawling grower covered with medium sized blooms of ten to fifteen petals displaying bright yellow stamens.

Starina and Scarlet Gem are bright orangey red, medium to slightly larger sized miniatures that do well here.

A species of rose grown widely here is Austrian Copper, a hardy disease resistant shrub. It is covered with small single blooms on its long arching stems. One of the very earliest roses to bloom, its single flowers are coppery scarlet inside and old gold outside the petals. It blooms just once but the display an established bush gives is outstanding.

Doesn't everyone love a pink rose? In pale pink try the queenly hybrid tea Royal Highness. It glows in regal splendor against its glossy dark green foliage. It repeats a bit slowly but each bloom lasts a long time. Dainty Bess is a lovely single with five rose pink petals highlighted by the cluster of deep maroon stamens. It can be a medium to tall bush. Bewitched has a tall slender bud and there is a touch of blue to its pink. It can use good winter protection.

Two very double miniatures with hybrid tea shapes are June Time and Baby Betsy McCall.

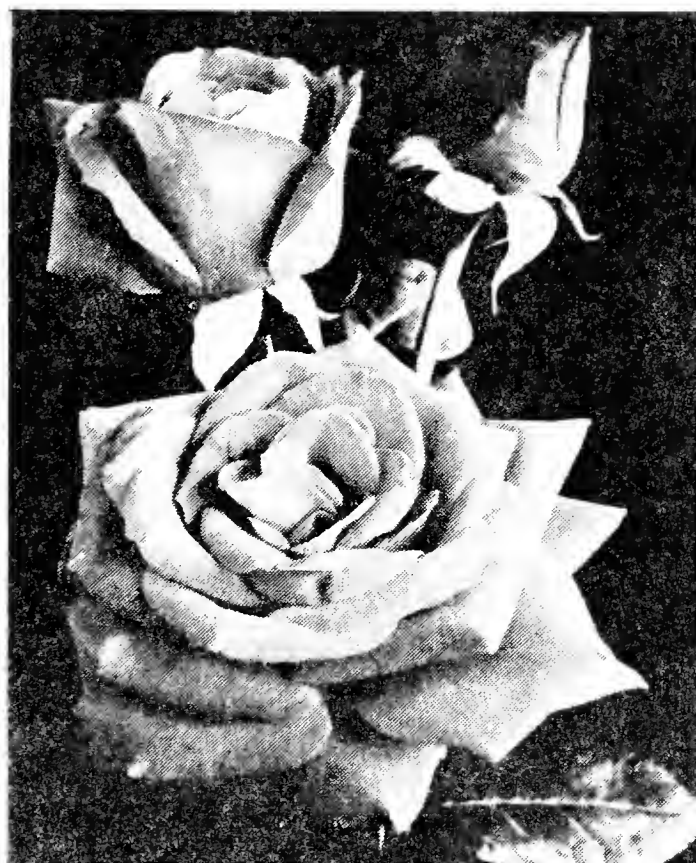
In the polyantha group is The Fairy, a tiny pink double bloom that grows in clusters with very tiny glossy foliage. This rose can get to be a large sized shrub. It is

very hardy. Cecile Brunner is the old (1881) "sweetheart rose." Its slender pink buds based yellow were a favorite of years gone by.

Deeper in color Perfume Delight lives up to its name. Miss All-American Beauty is a buxom bloom with good sized foliage on a fair sized bush. Phoenix in our yard has been almost constantly in bloom. Century Two is called an improved Charlotte Armstrong and both are good roses. Pink Peace is a sport from Peace, has a white membrane edge to each petal and has dusty looking foliage. All these hybrid teas go from medium to "hot" pink in color range and would be good choices for any garden.



**Angel Face — Floribunda**



**Scarlet Knight — Grandiflora**

Queen Elizabeth is the rose which helped start the whole "grandiflora" story. It is one of the few which fit the original description of being taller than floribundas, blooms shaped like hybrid teas and coming both in clusters and one bloom per stem on stems of good length for cutting. Camelot is a more salmon pink compared to Queen Elizabeth's medium pink and Camelot also has more petals.

Cri Cri is a larger flowered miniature. Judy Fischer has a very high centered form. Bo-Peep is a wee tiny one, deep pink in the middle of the bloom and pale pink at the edges.

Instead of planting pink petunias again, try the polyantha China Doll — it blooms as much and does not have to be replanted each spring.

For a shrub rose that cannot be beaten — get Belinda. It flowers in medium pink trusses like lilacs and has shiny disease resistant foliage. Pink Grootendorst is the one to try for a small carnation-like flower. A hybrid rugosa, it is a tough shrub up to four feet or so and does repeat bloom with its small "pinked" edged flowers.

In pink blends there is Chicago Peace, a more glowingly colored sport of Peace. Like Peace, it is slower to repeat but what a joy when it blooms. First Prize is just that — a prize to be treasured even though it needs winter protection. It has huge petals that slowly unfurl and holds its tight high center until the very last minute. My favorite is Confidence, a lady-like rose in pretty pastel shades of peach, pink and white.



A grandiflora which is seldom out of bloom is Pink Parfait. Its clusters of blooms are whipped cream pink in the center of the bloom and darker pink at the edges of the bloom.

Two very popular floribundas are Fashion, a profusely blooming peachy pink, and Vogue, a hybrid tea shaped salmony-coral pink.

One miniature which is as fragrant as any large rose is Baby Ophelia, a delightful blend of pastel pink, peach and yellow.

A red blend hybrid tea which varies from bloom to bloom in color is the raspberry scented Granada. It is a small bloom and tends to attract mildew, but remember to spray and enjoy this captivating beauty.

In red blend miniatures there are many winning choices. Jeanie Williams is a orangey red reverse yellow charmer. Magic Carousel and Toy Clown are both white with red edges but in quite different flower forms.

And there is just nothing like a red, red rose! One that has a large round bloom and is nearly thornless is Old Smoothie. Every thing about this one is extra — large leaves, thick stems and heavy petals. Chrysler Imperial is a medium red classic beauty but in this area seems to need to be replaced about every four years to obtain fresh stock. Crimson Glory is an old time fragrant favorite but usually is a low sprawling bush and can be mildew prone. For vigor try Mister Lincoln, a tall bush, velvety petals and fragrant. And the winner of an A.R.S. fragrance award is Papa Meilland, a dark velvety delight. Darkest of all is the plum red, deeply fragrant Oklahoma, most attractive.

Scarlet Knight is a grandiflora with heavy substance in the petals. It has wavy red petals that open to a sort of cupped velvety bloom. Carousel is a big bush nearly always in bloom.

In floribundas Europeana blooms well, and Red Pinocchio is also a free blooming plant but keep an eye out for mildew on this one. Eutin is another older favorite which produces large clusters.

Choice miniatures in red can be found in Red Imp, Dwarfking and Beauty Secret. All do well here.

The best climber for performance is Blaze. A pillar type climber is Don Juan, a very blackish velvety red with heavy fragrance and substance.

In shrubs there is the bright Dortmund, a single red with a white eye. Its growth habit is much like a semi-climber. It has beautiful glossy holly-like foliage and if the blooms are not cut off, lovely hips form. Hansa, a hybrid rugosa, has fragrant red double blooms with a red violet shade. It does repeat bloom, is very hardy and can grow into a four foot by four foot shrub. F. J. Grootendorst is another hybrid rugosa which can be a good sized shrub. Its bright red "carnation-type" fringed double blooms are scentless.

For mauve colors there is the tall-growing Lady X which can be a mildew catcher but is serene in a cool lilac shade. Very deep toned is the happily bursting with bloom, fragrant Heirloom. It is classed as a hybrid tea but must have run-away blood because it would take more patience and persistence than I have to disbud it to produce one bloom to a stem.

Angel Face is a lovely medium lavender floribunda with deeper edged wavy petals in a rosette form. Lilac Charm is truly that — a five petaled charmer.

And Lavender Lace is an excellent miniature in a small to medium sized bush.

Hopefully this review through the color classes will be an invitation to you to try a few varieties that intrigue you.

# HORTICULTURAL THERAPY

Kathleen Neer

Every man in his heart knows there is  
goodness and wholeness in the rain, in  
the wind, in the soil, the sea, the glory  
of a sunrise, and in the trees,

—Liberty Hyde Bailey<sup>1</sup>

Colorado is far behind the rest of the country in the use of Horticultural Therapy — so far behind that when this author mentions the subject a common response is, "Oh, that must mean that you take care of sick plants." Briefly, Horticultural Therapy is like Occupational Therapy except that in the former, plant materials are the media as compared to art, sewing, pottery, and other crafts in the latter. It can be used in programs for retarded citizens, inner-city youth, alcoholics, drug abusers, physically handicapped, psychiatric clients, sight and hearing impaired persons, and prison inmates. It is also applicable in dealing with the aged and in vocational rehabilitation.

Adjunctive (or activities) therapies are those which complement formal group therapy and psychotherapy. Included in adjunctive therapies are Occupational, Recreational, Musical, and Horticultural Therapy. The latter is aimed at helping clients gain insight into themselves and their surroundings through the media of horticultural activities. Such activities may be limited to planting a single flower box outside a client's window or be expanded to a group project involving acres of vegetable gardens, depending on the space available. A Horticultural

Therapy program is implemented, most often, by an Occupational Therapist supervising volunteers skilled in different areas of horticulture or by a horticulturist with practical and theoretical knowledge of psychology.

Many professionals in the field of mental health are themselves gardeners (indoor and/or outdoor) and find it gratifying, relaxing, and a release for physical and mental tension. Dr. Karl A. Menninger, also a gardener, feels that Horticultural Therapy "takes the blinders off of patients and gives them a wider horizon." It is his feeling, philosophically, that it

brings the individual close to the soil, close to Mother Nature, close to beauty, close to the mystery of growth and development. It is one of the simple ways to make a cooperative deal with nature for a prompt reward.<sup>2</sup>

As early as 1699 Leonard Meager, in *The English Gardener*, hailed gardening as "no better way to preserve . . . health." It was recommended for "ills of the mind and nervous system." In 1768 Benjamin Rush, an English physician, felt gardening was a curative to the mentally ill.<sup>3</sup> Gardening was used in mental hospitals in Europe and England in the early 1800s and was treatment oriented. By 1846 many people in such hospitals had their own gardens. Horticultural Therapy is still used extensively in British hospitals and rehabilitation centers.



**Help for All**

Available literature makes reference to the therapeutic use of horticulture in U.S. hospitals in the late 19th century. In 1878 Clinton Valley Center (formerly Pontiac State Hospital), Pontiac, Michigan, used gardening by "inmates" for agricultural production.<sup>4</sup> The possibility of exploiting these people was realized, thus the emphasis on production was reduced and the focus became the therapeutic value of gardening for the individual. By the 1900s other hospitals gradually developed the same philosophy. Today Horticultural Therapy has nothing to do with the hospital economy as it did in earlier days.

In the early 20th century, American orphanages, tuberculosis hospitals, and women's reformatories had Horticultural Therapy programs. Occupational Therapy books from 1912-1919 highly recommended Horticultural Therapy as having an active role in recovery.<sup>5</sup> Veterans Administration hospitals offered extensive programs in horticulture after World Wars I and II. Unfortunately, over the years, expansive outdoor gardens became too expensive for many institutions and several programs were dropped.

Clinton Valley Center developed indoor programs in the 1950s and con-

ducted research into the potential of Horticultural Therapy for the center and other hospitals. Horticulture programs experienced further growth through the help of volunteers from garden clubs, churches, and other groups. But once again, some programs were dropped in the '60s, specifically those in mental health facilities, as the client's length of stay was shortened.

In 1968 Rhea McCandliss, then Horticultural Therapist at Menninger Foundation, surveyed 500 U.S. hospitals to find out if Horticultural Therapy was utilized. She received almost 500 responses and many institutions without a program inquired about how to start one.<sup>6</sup> The response was encouraging, but funding problems have limited many hospitals from incorporating such a program into adjunctive therapies.

A subsequent survey of 100 mental hospitals was conducted in 1972 by Herbert S. Plankinton, Jr., then a graduate student at the University of Delaware. All responded. Eighty-one percent used Horticultural Therapy — many with greenhouses, farms, and vocational programs. Forty-nine percent of the programs were a part of Occupational Therapy; others were connected with Industrial Therapy and Rehabilitative Medicine; still others were accredited by the state's department of vocational education. Cuts in funding have caused the loss of some of these programs.<sup>7</sup>

Today, Horticultural Therapy is utilized mostly in the East, and in Veterans Administration hospitals throughout the country. It is also used in conjunction with community and children's gardens. Horticultural Therapy has developed to such an extent that specialized equipment — raised flower beds and similar adaptations — for the physically handicapped are standard in rehabilitation centers.

Many Land Grant universities and private universities along the East Coast

offer a B.S. degree in Horticulture with a major in Horticultural Therapy. Kansas State University offers a B.S. degree in Horticultural Therapy. This is a recent development in the '70s, and other universities are being added to the list yearly.

In 1973 professionals in the field of Horticultural Therapy organized themselves for the purpose of pooling resources and establishing a network by which to share ideas. The organization, National Council for Therapy and Rehabilitation Through Horticulture, now has 500 members, sponsors an annual conference, holds regional workshops, and publishes a newsletter along with a Lecture and Publication Series.

Working with plants has broad appeal and provides great flexibility, i.e. the work can be active or passive and carried on in various locations. It can lead to a long-term interest in some area of horticulture, provide the client with the satisfaction of having produced something with his own hands, and requires no previous experience. The work is considered non-threatening in that most plants respond to reliable watering and feeding, and do not make judgments about the feelings and behavior of the person caring for them.

The Horticultural Therapist, ideally, is part of the treatment team and assumes the role of providing for healthy relationships between the individual client and therapist, between the individual client and group, and between the group and therapist through the medium of horticulture. The therapist provides some structure to the horticultural activities with the goal being that the client benefits in the four following areas to be discussed in further detail: developing new skills, socialization, personal growth, and physical activity.<sup>8</sup>

The development of new skills in working with plants can arouse

curiosity about other areas of horticulture, encourage more detailed perception of one's surroundings and lead to an academic or vocational interest in the field. Clients have sometimes developed other interests such as photography, painting, or pottery as a result of being in a Horticultural Therapy program. Such hobbies have also been known to lead to an interest in plants when the client was not initially interested.

Horticultural Therapy provides for group interaction around a common goal and around shared responsibilities. It is often easier for clients to socialize in the atmosphere of planning a garden or potting rooted cuttings of houseplants. The ultimate goal of the group is to give clients a chance to attempt and to achieve new behavior patterns that are constructive and rewarding. For example, an antagonistic individual may respond to pressure from the group more constructively than to confrontation from the therapist. Also discussions of disappointment when a crop dies provide a tool for dealing with loss and frustration tolerance.<sup>9</sup> It is also helpful to socialization if the group does most of the planning, with staff taking a back seat when possible. Clients have been known to organize garden clubs, initiate field trips, or share their plants as a result of group activities.

**Learning Self-reliance**





Clients can experience personal growth from increased self esteem, aggressive outlets, stimulated creativity, and an interest in the future through horticultural programs. When an individual can see that his investment of time and energy has resulted in a healthy growing plant, it is a boost to self esteem. An aggressive activity with clearly defined limits and control such as planting a tree, mixing soil, pruning, or destroying weeds is a healthy outlet for hostility. Horticulture also provides a creative outlet in such areas as landscape designing and flower arranging. Interest in the future may be stimulated simply through having the responsibility of taking care of a plant from day to day or may result from thoughts of expanding one's interest in horticulture.

The physical activity involved in horticulture is not only an aggressive outlet but satisfying recreation. It can help overly active clients channel energy. Depressed clients often appreciate the opportunity for such activity.

Horticultural Therapy is an adjunctive therapy aimed at helping clients gain insight into themselves and stimulate their interest in the world around them. It has a long history but not in the same context known today. There is no longer emphasis on producing crops for the economy of the facility. The emphasis is on new skills, socialization, personal growth, and physical activity. Though horticulture programs have been terminated in the past, the future looks hopeful due to changes in social attitude. Such changes have influenced university curricula and encouraged the growth of the National Council for Therapy and Rehabilitation Through Horticulture.

## FOOTNOTES

1. Donald P. Watson and Alice W. Burlingame, *Therapy through Horticulture* (New York: The Macmillan Company, 1960).

2. George T. Tereshkovich, "Horticultural Therapy: A Review," *National Council for Therapy and Rehabilitation Through Horticulture (NCTRH) Lecture and Publication Series I* (February 1975).
3. Watson and Burlingame.
4. *Ibid.*
5. *Ibid.*
6. Rhea McCandliss, "What is Horticultural Therapy?," *NCTRH Newsletter* (March 1975).
7. Herbert S. Plankinton, Jr., "Horticulture as a Work Program for Therapy," (Master's Thesis, University of Delaware, 1973) p. 10.
8. Paula Diane Hefley, "Horticulture: a therapeutic tool," *Journal of Rehabilitation* (January/February 1973)
9. Andrew Barber, "Horticultural Therapy at the Menninger Clinic," *NCTRH Lecture and Publication Series I* (Feb. 1975).

## REFERENCES

- Brooks, Howard D., and Oppenheim, Charles J. *Rehabilitation Monograph 49: Horticulture as a Therapeutic Aid* (New York: Institute of Rehabilitation Medicine, NYUMC 1973).
- Burlingame, Alice W. *Hoe for Health*. Birmingham, Michigan: By the Author, 3891 Oakhills Drive, 1975.
- Ells, Dr. James. Colorado State University, Ft. Collins, Colorado. Interview, 7 November 1975.
- Feucht, Dr. James R. Colorado State University Extension Agent, Denver, Colorado. Interview, 16 October 1975.
- Fidler, Gail S. and Jay W. *Occupational Therapy: A Communication Process in Psychiatry*. New York: The Macmillan Company. 1967.
- Hefley, Paula Diane. "Horticulture: a therapeutic tool." *Journal of Rehabilitation* (January/February 1973).
- McCurry, Eleanore. "Flowers and Gardens — Therapy Unlimited." Copies offered by author at Third Annual NCTRH Conference, East Lansing, Michigan. September 1975.
- Plankinton, Herbert S., Jr., "Horticulture as a Work Program for Therapy." Master's Thesis, University of Delaware, 1973.
- Sikes, Margaret. Director of Education, Denver Botanic Gardens, Denver, Colorado. Interview, November 1975.
- Watson, Donald P., and Burlingame, Alice W. *Therapy Through Horticulture*. New York: The Macmillan Company. 1960.

# THE KROHNS:

## A HELPFUL INFLUENCE

Virginia McConnell Simmons

John Ruskin wrote: "That man is richest who, having perfected the functions of his own life to the utmost, has also the widest helpful influence, both personal, and by means of his possessions, over the lives of others."

When David H. Krohn died in Denver on February 27, 1976, the Denver Botanic Gardens became the recipient of the Krohn house at 790 Gaylord Street. Many members of the Botanic Gardens did not know Mr. Krohn, a "gentleman of the old school," or his late wife, both of whom were greatly admired by their friends.

David Krohn was born on December 25, 1885, in Kansas City, Missouri. The son of Jewish immigrants, he moved to Denver as a young man and built a career as a successful insurance broker, respected for his honesty and integrity in dealing with his clients.

His marriage to LaVeta Bertchy was of great importance in his life. Born in Colorado's San Luis Valley, she was a pianist who received her musical education in France and who taught at the Lamont School of Music in Denver. Together the Krohns shared a diversity of interests, even a difference in religious faith, in an exceptionally happy marriage which spanned more than fifty years.

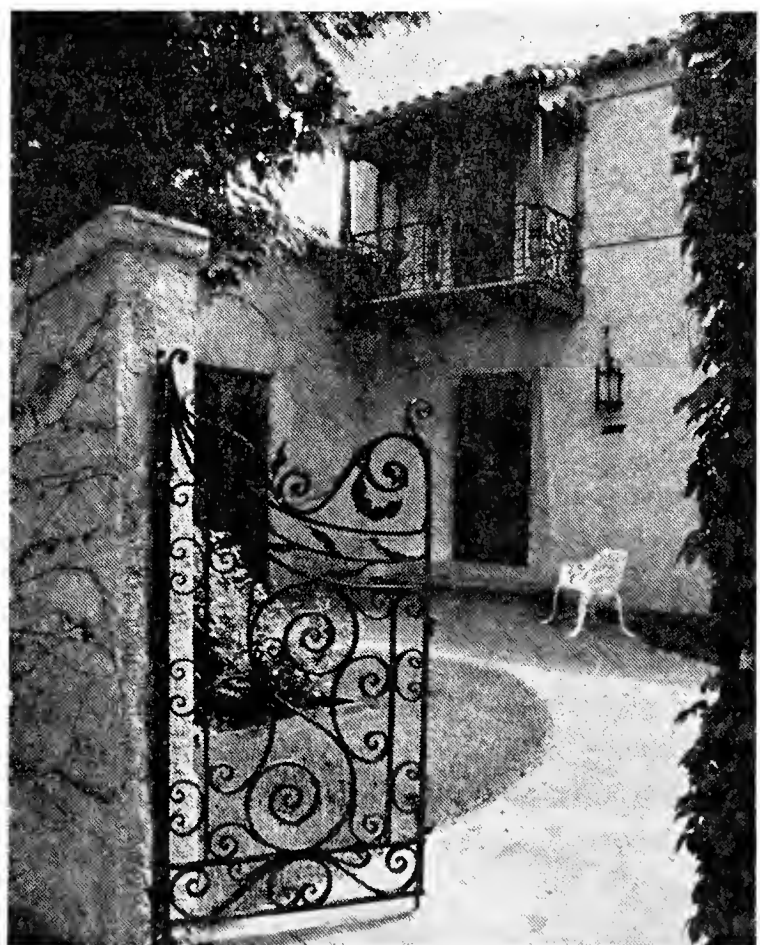
When the fashionable South Subdivision of Capitol Hill was being developed, the Krohns chose a building site, with 66.7 foot frontage and 125 foot depth, at the corner of Gaylord and Eighth Avenue. They selected Denver architect Ray Irwin to design their home.

The Krohns' house, built in 1936, was in the style usually referred to as Spanish.

It was a style then popular in California and the Southwest. These were stucco, tile-roofed buildings, well adapted to their climate and landscape. Incorporated in the trim were ornamental iron and wood. The inspiration of such homes might be called romantic today, but it also stemmed from a genuine interest in the architectural traditions of the Pueblo Indians and the Spanish settlers of the Southwest.

Lending special charm to the Krohns' Spanish house was a small garden at the front entrance, enclosed by a stucco wall with an iron gate. Water splashing in a fountain greeted guests as they passed through the garden. Over the front door a tile-roofed balcony with wood and iron detail carried out the architectural tradi-

Entrance Court



tion further. Inside, iron gates at the dining room's entrance, an iron handrail on the main staircase, and other features carried out the Spanish motif.

The all-masonry structure was not designed in grand proportions. Rather, it was intended to be a comfortable home for Mr. and Mrs. Krohn, who had no children but many interests and friends. On the first floor, which occupies about 1600 square feet, there are a central hall, a large sunken living room, a dining room, and the kitchen. The beam-ceilinged living room features a dramatic fireplace and a balcony, which is reached from the hallway on the second floor. The upper level of the house contains two bedrooms, a sun room, and a sitting area in the spacious hall.

The living room especially reflects Mrs. Krohn's interests. In it once was a grand piano, and here Mrs. Krohn entertained the Steinway Club, of which she was a founder. Here too came members of the French Club and the Spanish Club. The room was furnished with delicate French furniture and a large Oriental rug, which is reputed to have been crafted by three generations of one family. As the Krohns traveled throughout the Southwest, Europe, and even Russia, they collected paintings, art objects, and rugs which cover most of the home's floors. A fine collection of cut glass, much of it signed by the artisans, was housed in a lighted cabinet in the dining room.

The Krohns were interested in many community activities also. He was active in the Salvation Army, and served on the boards of directors of the American Medical Center (formerly the Jewish Consumptives Relief Society) and the General Rose Memorial Hospital. He also was a life member of El Jebel Shrine and Colorado Consistory No. 1. Together the Krohns supported the community's cultural enterprises, including the Denver Symphony and the Botanic Gardens.

Before Mrs. Krohn died on June 9, 1973, the couple had determined that



**Dining Room**

their home should be given to the Denver Botanic Gardens as a residence. Just as they had been generous throughout their lives, so they were generous through their wills which bequeathed many of their possessions to the benefit of Denver. Mrs. Krohn's grand piano, her practice piano, and her music library were given to Colorado Women's College. Another example is the gift of Mr. Krohn's fine collection of workshop tools to a boys' school.

The house came to the Denver Botanic Gardens with many of the furnishings as the Krohns had lived with them — Oriental rugs, cut glass, and furniture. Mr. Krohn's will provided that the house should be used as a residence, and the garden's director, Dr. William G. Gambill, Jr., has made his home at 790 Gaylord since early spring.

The Krohn gift will be, in Ruskin's words, a "helpful influence" for the Denver Botanic Gardens for many years to come.

### **SOURCES**

- Abstract Book, Assessment Division, City and County of Denver
- Interviews, Mrs. F. V. Altvater and Mr. and Mrs. Noah A. Adler
- Obituary, "David H. Krohn," *Intermountain Jewish News*, March 5, 1976
- Stone, Rabbi Earl S., "Tribute to David H. Krohn," March 4, 1976

# Exotics of COLORADO



## Potato

### *Solanum tuberosum*

Helen Marsh Zeiner

The white or Irish potato *Solanum tuberosum* L., a very common "every-day" vegetable, is a plant with a long and interesting history.

It was cultivated thousands of years ago by the pre-Incan races of Peru, as well as by the Aztecs and Mayas. It is probable that the plant originated in Peru, where numerous varieties are known. Some have colored flesh, some have colored skins; some are large, others small; skins vary from smooth and shining to very rough and warty. The flowers may be white or colored, and the plants may be upright or vining.

Potatoes were an important food for these early peoples, and were eaten raw, boiled, roasted, made into bread, and even dried.

Why this Peruvian vegetable is called "Irish potato" is one of the interesting parts of potato history. In 1520 the Spaniards first carried potatoes from America to Spain, where they were cultivated. In 1560 potatoes from Spain were taken to the Spanish colonies in Florida. From Florida, they were taken to England in 1565 by Sir Francis Drake and Sir John Hawkins. Here they were used for feeding cattle before they were accepted as food for humans. Potatoes are thought to have been brought to Ireland in 1585 by Sir Walter Raleigh.

They became an important and very popular food in Ireland, and the British knew them as Irish potatoes. When the British colonists came to New England, they brought Irish potatoes with them.

The word potato is a corruption of "batata," the Indian name for sweet potato. White potatoes were "papa" to the Incas.

Potatoes came to Colorado with the first settlers. Wagon trains were well-supplied with potatoes. When any were left after the long trip across the plains, a few were saved for "seed," especially when the settlers came from farms and small towns. Many families had potatoes and some were planted in gardens as early as the spring of 1859. Many more were planted the following year.

The first farmers soon learned that certain Colorado soils and Colorado sunshine with plenty of water would produce extraordinary yields of potatoes. The sandy bottoms along the Platte River and Cherry and Clear Creeks produced a surprising number of large potatoes. Some, weighing as much as 2 pounds and bigger than two fists, were grown from stock which produced potatoes only half that size back "in the states."

William Parkinson was the first commercial potato grower in the Platte



bottoms just below the town of Denver. He shipped in eyes of Neshannock potatoes from Virginia and harvested 100 bushels an acre, of better quality than the original stock.

Neshannock was a popular variety at that time. A Neshannock received a press notice when H. H. McAfee took it to the office of the *Rocky Mountain News* for display in August of 1860. It had been grown in Clear Creek valley with no irrigation and was 4½ inches long and 2¾ inches in diameter.

Gardening activity was prompted by as many as 1000 immigrants a day arriving in the area, all needing food, with potatoes much in demand.

In 1862, J. M. Brown, 8 miles up the Platte, brought a load of potatoes to Denver, leaving at Hawkins store on Blake Street two which weighed 4 pounds each. Two weeks later C. H.

53. Potatoes were plentiful by 1868 and the retail price in Denver was 2-3¢ a pound.

Rufus H. Clark, known as Potato Clark because of his success as a grower, had a farm now included in Overland Park along the Platte River near Florida Avenue. When news of the Chicago fire of 1871 reached Denver, he brought a load of potatoes to be auctioned to raise money for relief for the fire victims. This led to other donations, and a large sum of money was sent to Chicago. Potato Clark was an important man in Denver's history in other ways. His gift of 80 acres of land west of University Boulevard determined where the University of Denver would be located and formed the heart of the D.U. campus.

Potato growing became important in Greeley with the formation of the Union Colony (1870) and assumed com-



#### Bountiful Harvest

McLaughlin brought in a 5 pound potato. Robert Gordon, 3 miles down the Platte, raised a Peachblow that weighed 4 pounds.

In 1864 the varieties mainly cultivated were Kidney, Neshannock, and Peachblow. In 1868, at the third annual territorial fair in Denver, one exhibit was a bushel of potatoes containing just

mercial proportions when rotation of potatoes with alfalfa began in 1886. In October 1895, Greeley held its first Potato Day, an agricultural festival featuring the potato. Everyone was to be served a baked potato, but several thousand people came and there were not enough baked potatoes to go around. A souvenir program gave a

sketch of the Union Colony and had much information about the potato crop, with names of prominent business and professional men who had made money growing potatoes.

The Sweet ranch at Carbondale by scientific cultural methods brought Russet Burbanks (Netted Gem) to such perfection that Luther Burbank acknowledged his debt of gratitude to the Sweet ranch for preserving the strain in its purity and trueness to type.

During the rush of miners to the San Juans in the 1870s, farmers along the streams supplied potatoes and whatever other food they could produce. The first record of potato growing in the San Luis Valley dates back to those years. During the Leadville boom in the '80s, farmers in Del Norte and Saguache, growing on only a few acres, hauled potatoes to the mining camps.

In 1875, DeWitt C. Travis on San Isabel Creek in Saguache County grew 70,000 pounds of potatoes. Some were Travis Rocky Mountain Seedling, a variety he propagated.

In 1882, E. C. Nesbit and Peter Barkley were growing potatoes commercially near Del Norte. Barkley is known for bringing in Barkley's Prolific from Canada. This potato was renamed Brown Beauty in 1906, and at that time was the leading variety in the San Luis Valley. An effort was made to trace the history of Barkley's Prolific and the Royal Horticultural Society in London, 1921, declared it an American seedling. The decision was then made to consider this a San Luis Valley product always to be known as Brown Beauty.

In 1886 R. A. Chisholm grew 857½ bushels to the acre and won a contest promoted by the *American Agriculturist*. The subsequent publicity started the San Luis Valley on its way to success as the largest potato producing district in the state.

Many potato varieties were cultivated in the early 1900s, including Russet Bur-

banks, Brown Beauties, Snowflake, Bliss Triumph, Pearl, Early Ohio, People's Russet, Irish Cobbler, New York Rural, Downings, and Katahdin. Red McClures became important later. The *Alamosa Daily Courier* in May 1939, wrote about the importance of the Colorado Red McClure as a seed potato. In October 1950, the *Rocky Mountain News* reported that seed potatoes had become such a big industry that schools in the San Luis Valley were closed to harvest Red McClures.

*Solanum tuberosum* is an important member of *Solanaceae*, the potato or the nightshade family, which includes other important food plants such as tomato and eggplant. It also includes tobacco, petunias and other ornamentals, and wild plants such as buffalo bur and ground cherry. Important drugs including atropin are derived from this family. Some very poisonous plants such as deadly nightshade also belong to *Solanaceae*.

## REFERENCES

- Hedrick, U.P. *Sturtevant's Notes on Edible Plants*. Albany: J. B. Lyon Company, State Printers, 1919.
- Lamson, J. B. and Reed, Earl G. *Potato Production in Colorado, Wyoming, and Western Nebraska*. Denver: Ag. Dept., Chicago, Burlington, & Quincy R. R. and Colorado and Southern R. R., n.d.
- Steinel, Alvin T. *History of Agriculture in Colorado*. Fort Collins: State Agricultural College, 1926.
- Verrill, A. Hyatt. *Foods America Gave the World*. Boston: L. C. Page & Company, 1937.

## HELP PLEASE

Every copy of *The Green Thumb* returned to the Botanic Gardens because of an incorrect address costs the Gardens more than \$1.00.

If you move PLEASE report your new address immediately.

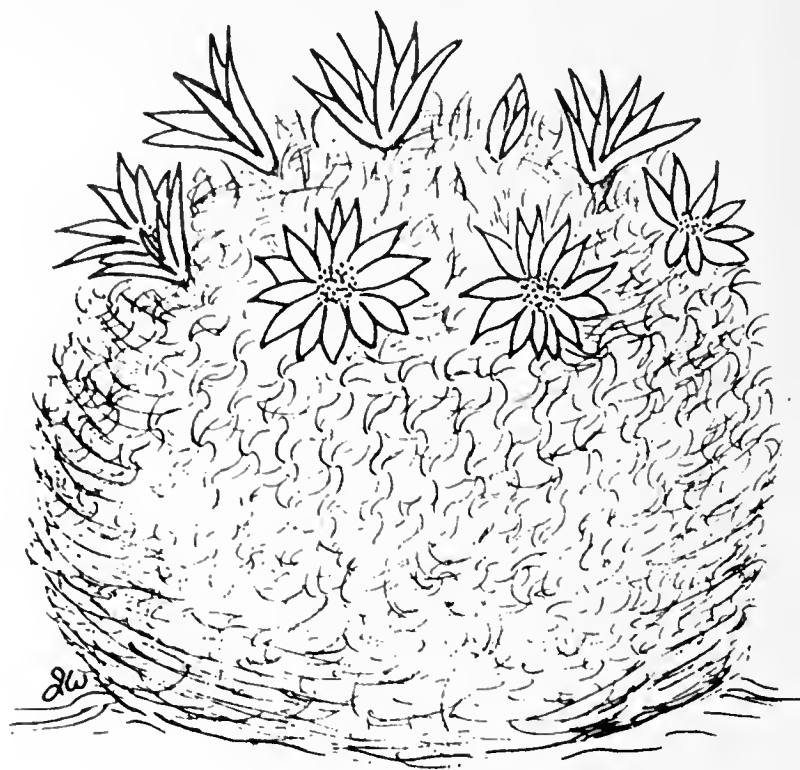
# People are Generous

Andrew Pierce

From Brazil to the Middle East they come in what is almost a daily occurrence — certainly it's more than twice a week! To the staff of the Denver Botanic Gardens, people's generosity by way of plant donations is almost a phenomenon. It is with many thanks that I record many of the new arrivals. A complete list of the names of kindly donors covering the wealth of material given to the Conservatory and greenhouses during the past nine months would be too long for publishing here, so I will mention only some of the principal donors.

As mentioned before, our plants come from all parts of the world. I should first of all like to mention the late Mr. Billings McArthur, who packed and shipped many donations of plants from his home in Florida. They have nearly all been air layers of tropical trees, shrubs, and vines on which he was a recognized authority. Several of these are now located in the Conservatory. He visited us as recently as July during the conference of the American Association of Botanic Gardens and Arboreta when he provided us with material of *Clusia*, *Plumeria*, *Arenga* palms, *Pittosporum*, and *Heteropteris*.

Members of the pineapple family (*Bromeliaceae*) seem to be increasing in popularity at the present time. If recent donations in this section are anything to go by, the Gardens will need to increase glass coverage rapidly. Due to the generosity of Paul Earle, Betty Welty, Larry Mason, and Dick Schwendinger along with others, the Garden's



## Cacti Among Gifts

collection of this interesting family has doubled this year. Extra impetus has been given by the re-activation of the Bromeliad Society (now known as the High Country Bromeliad Society). Its members have been most helpful not only in the giving of plants but also in the giving of their knowledge. The latter, of course, cannot be measured, but it is important nevertheless. Amongst the interesting gifts from this family were several new genera, namely: *Ronnbergia petersii* L. B. Smith from Colombia, *Fosterella penduliflora* L. B. Smith, a pretty grey-leaved member of the family from Argentina, *Orthophytum saxicola* L. B. Smith from Brazil, *Streptocalyx poeppigii* Beer which has a large flower spike of scarlet bracts and purple blossoms, and *Araecoccus flagellifolius* Harms with two-foot-long thin tapering leaves. Of

course there has been an extension of the better known genera of *Bromeliaceae* such as *Tillandsia*, *Billbergia*, *Vriesia*, and *Aechmea*.

## Our Large Plant Families

Two of the largest flowering plant families on the planet are *Cactaceae*, from the American continents, and worldwide *Orchidaceae*.

A small number of native Arizona cacti was collected in the wild near Bisbee Green by Mr. and Mrs. Roger Dings on behalf of the Smithsonian Institution. These quite mature specimens were delivered to the Gardens in the middle of the past summer. They included a large *Ferocactus wislizenii* Britt. & Rose, *Echinocereus fendleri* Engelm., *Yucca schidigera* Roezl, and *Fouquieria splendens* Engelm. Because of their size some will soon be finding their home in the Conservatory at the west end. We also had a donation of cacti and succulents from Mr. Tom Howell all of which were being successfully grown under lights in his basement. Size appeared to be no hindrance as the *Cereus* and *Cleistocactus* were six feet tall!

With such a large family as *Orchidaceae* it is only to be expected that their variation when donated is just as wide. Mr. and Mrs. William Thurston, who collect mainly *Encyclias* in Mexico, have again been most generous. The Gardens now has a fairly complete collection of this genus. Some authorities have in the past included these plants in the genus *Epidendrum* but like the family the genus can be too large to comprehend, so separation is needed. The Thurstons also provided us with plants of better known genera as well as examples of *Mexicoa* and *Quitlantzama*, two new genera closely related to *Odontoglossum*.

One of the staff, Larry Latta, has also given a fair number of orchids,

some of which were collected on a personal trip to Venezuela early in the year.

Just last month we were given a selection of very well-grown orchid plants by Mr. Norman Cohn. They were part of his collection growing profusely in a small greenhouse on a 15th floor roof top! Included were several Award



Many Orchids Received

of Merit and Floral Cultural Commendation plants. Along with these were several miniature *Cymbidiums* and some *Phalenopsis* (moth orchids) to add to our collection which was weak in these areas. At the same time the Cohns gave the Library two superb books on orchids — one on native Australians and the other in the form of portfolio prints.

Earlier in the summer we were left another well-known collection of orchids by the late Mrs. Margaret Mead, given to the gardens by her son, Mr. Bill Mead. It was a very wide-ranging collection covering 26 genera. Many of the plants were also award-winning hybrids. New to us are the genus *Anguloa* represented by *A. cliftonii* Rolfe from Colombia and *Hexisia bidentata* Lindl. from Central America. This little gem has upright spikes of bright scarlet flowers.



The quality of orchid plants that have been given to the Gardens this year is extremely high. Thanks must go to the strong Denver Orchid Society which shows continuing interest. Orchids like some other plants are very prone to virus diseases such as tobacco mosaic and cymbidium mosaic, and even though they appear healthy to the naked eye, such outward symptoms are no guide to virus infections. At the same time high quality and care are of prime importance.

## From Cocoanuts to Tree Tomatoes

From cocoanuts to tree tomatoes is the range of new donations that have found their way into the greenhouses. We never know from one day to the next what is in store — perhaps that is part of the whole fascination of gardening. For example, on the day that we picked up the tree tomatoes (*Cyphomandra betacea* Sendt.) we also obtained three *Cedrus atlantica* Manetti var. *glauca* that had been brought into

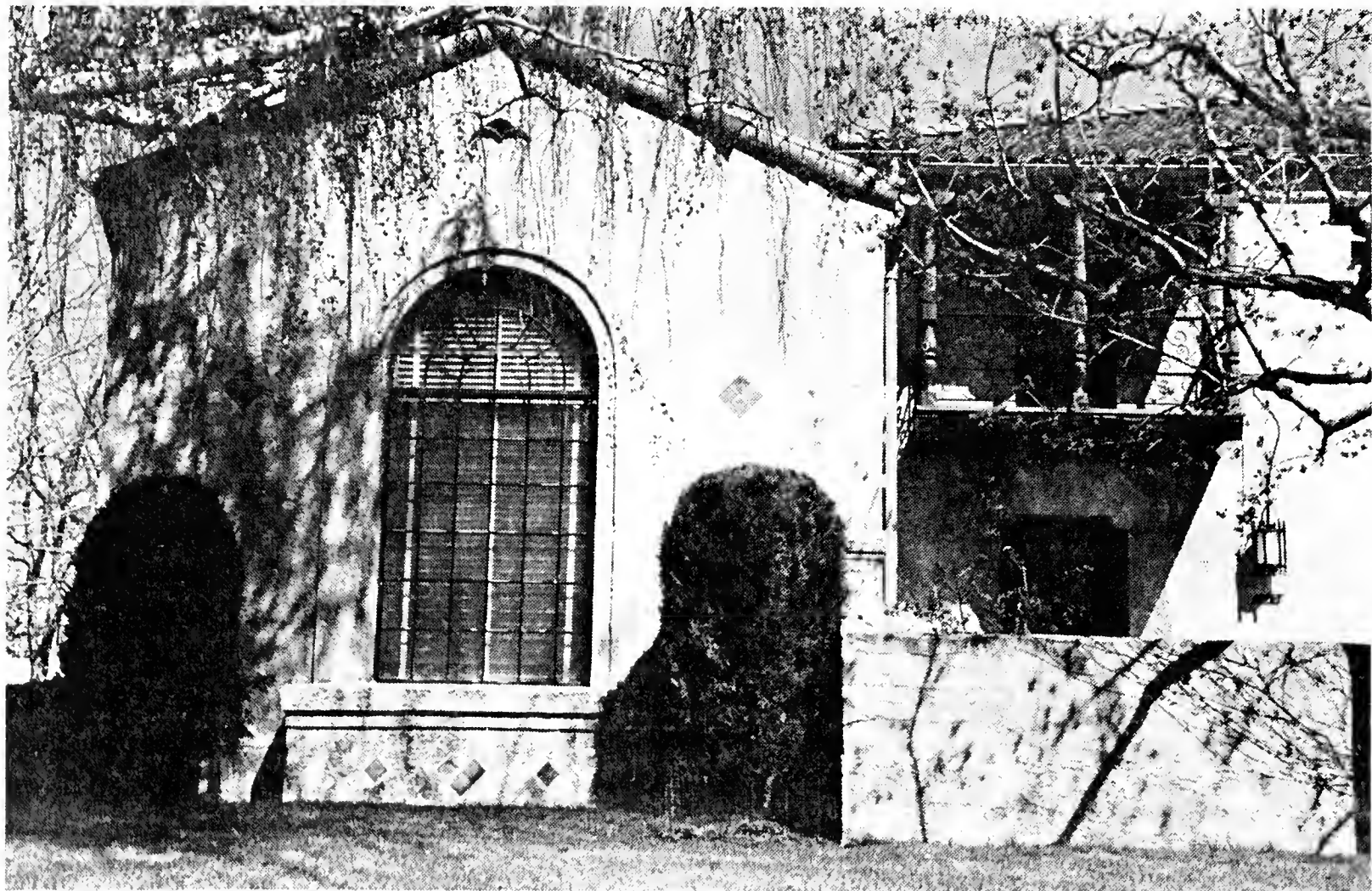
the Denver area from California three and a half years ago, each year being over-wintered in a garage under lights, as well as an attractive fern picked up at a retail food store.

Many of the donations are single specimens like the delightfully scented *Mitriostigma axillare* Hoelst. (a relation of the gardenia) in its two inch pot, or the largest orchid in our collection — *Renanthera* cv 'Lena Rowald,' which now resides in the Conservatory.

It would be wrong to pass over the interest of our own garden staff without thanks. Perhaps not surprisingly ten members have donated plants so far this year. With their sincere concern for the extension of the Gardens collection, you may rest assured that all donations will be cared for to the best of our ability.

Donations are a gratifying part of the operations of any botanic garden, and we are indeed most fortunate to have such generous donors planting their gifts in our midst. Outside donations are taken care of by Mr. Glenn Park, and I look after the indoor acquisitions.

Exterior — Krohn House



# THE CHATFIELD ARBORETUM

Newell M. Grant

The Chatfield Arboretum is much closer to a reality than when the Summer 1973 issue of *The Green Thumb* highlighted the plans and aspirations of the Botanic Gardens. The surrounding area has changed considerably in the last several years and so has the Arboretum. Our enthusiasm for the Chatfield Arboretum continues to grow — matched in part by an increasing realization of the magnitude and grandeur of the project and its very exciting potential.

## What has been going on at Chatfield?

The most apparent changes are not on the 750-acre Arboretum site but surrounding it. The Chatfield Dam and Recreation Area is now open to the public and in the final stages of construction. Picnic and parking areas are completed, and recreation-minded visitors have begun flocking to the area on summer weekends, enjoying activities such as fishing, hiking, boating, camping, and bicycling. As the largest body of water in the Denver metropolitan area, these recreational facilities will increase in public use considerably — 1,400,000 visitors annually are expected by 1978.

Johns-Manville Corporation had, on 4 July 1976, the grand opening of the Ken-Caryl Ranch as its world headquarters. A 10,000 acre "spread" just north and west of the Arboretum site, Ken-Caryl is undergoing careful and enlightened development. On a ridge overlooking the Arboretum stands the large J-M Research and Development Building.

Johns-Manville's location at Ken-Caryl and the completion of the Chatfield Recreation Area indicate the level of public interest in that portion of our metropolitan area. It seems that the urbanization process will only continue, and the Denver Botanic Gardens is fortunate to have such a fine location and site for development of the Arboretum.

## Chatfield Arboretum

The site of the Arboretum itself is a 350-acre site on lower Deer Creek with the remaining 400 or so acres contained in an irregular "tail" of varying width running for several miles along Colorado Highway 73. No plans have been formulated for the ultimate use of the "tail".

Guidance for the development of the Arboretum is provided by Dr. William G. Gambill, Jr., Director of the Denver Botanic Gardens.

The Chatfield Arboretum Committee was formed by the Trustees to provide guidance, advice, and assistance to Dr. Gambill. Members of the Committee are Messrs. J. F. Baxter, Edward P. Connors, Newell M. Grant, Herbert I. Jones, Harry B. Kuesel, John C. Mitchell, Dr. Moras L. Shubert, Con Tolman, and Miss Exie White. Dr. Gambill, Glenn Park, and Lee Schwade serve as ex-officio members from the Botanic Gardens staff; the Committee is chaired by Newell Grant.

A number of steps have been taken at the Arboretum in the last couple of years. Perhaps the most interesting is that the Hildebrand farm buildings, which are located on Deer Creek, have been placed



**Hildebrand House is Historic Building**

on the National Register of Historic Buildings, and are believed to date back to 1849 — nine years before Denver was founded and twenty-seven years before Colorado was admitted to the Union! The farmstead will be preserved as an historic farm and will serve as a reminder of the pioneering and agricultural heritage of the high plains.

The Hildebrand farmstead and the nearby Green farm buildings have not been lived in and are boarded up. Vandalism has occurred from time to time so a mobile home was purchased and moved near the Hildebrand farmstead in 1975 to house a caretaker.

A temporary nursery has been established which contains a number of plants moved from York Street.

The Corps of Engineers has provided a paved parking lot and a walkway along Deer Creek. It also has built a raised compacted soil pad near the parking lot and across Deer Creek from the Hildebrand farmstead as the new site for the schoolhouse. The Chatfield Committee is working to have the foundation poured and the schoolhouse moved in the fall of 1976. It will be placed on the pad to raise the building above the flood plain. The schoolhouse will serve as the Visitors' Interpretive Center and will also have a children's playground furnished in a late 19th- or early 20th-century manner.

Last May a very detailed contour map with 2' contours on the scale of 1 inch to 100 feet was prepared by the firm of Kucera and Associates of Denver. This map will be extremely helpful in the planning and development of the Chatfield Arboretum.

The U.S. Soil Conservation Service has completed detailed soil tests of the Arboretum site, complete with core drillings, and furnished the Botanic Gardens with a compilation of the soil types, the characteristics, and a map indicating where they are found. They even named a type of soil not previously catalogued *Botanicum* after the Denver Botanic Gardens! The SCS is printing a brochure of the soil types with suggested plants and planting methods which should be available in final form by this fall.

### **Where are we going?**

The Chatfield Committee is currently preparing a statement of purpose for the Arboretum which will be submitted to the Board of Trustees. It is the Committee's general intention that the Arboretum will be a permanent collection of plants, primarily trees and shrubs from a variety of habitats. Both native and introduced species, as well as exotic and endangered varieties will be cultivated. There will be a variety of education programs ranging from tours to scientific research.

It is a little difficult to say just what Chatfield will be or look like in two or three decades. It is not hard, however, to let one's mind wander from today's abandoned buildings and uncultivated fields to clumps of tall trees, collections of bushes and shrubs, the Hildebrand farmstead restored and open to visitors, and research facilities . . . Another way of putting the dream would be to regard the Chatfield Arboretum as the woody plant department of the Denver Botanic Garden's York Street gardens and conservatory.



One cannot help being excited at the tremendous potential of Chatfield Arboretum. The development will be done in phases, and Chatfield's size and scope mean that it will take some time. The Twenty-Five Year Plan which was adopted in 1973 outlined the development of the Arboretum; it will be perhaps a decade after planting before many of the trees become sizable. Thus Chatfield represents a commitment to the future — to the future of the Denver Botanic Gardens. It must be worked on now so that sometime around the turn of the century we will have a first class facility.

If Chatfield is to become a facility for

public enjoyment, it is clear that there is a long period of development ahead of us. But anyone who has seen the Arnold Arboretum at Harvard or experienced its vistas through mature trees, will know it will be worthwhile. Even though far afield, any of the parks laid out by Frederick Law Olmstead in the last century (such as Franklin Park in Boston, Prospect Park in Brooklyn or Central Park in New York) or some of the lovely English gardens laid out by "Capability" Brown about the time of American Independence are proof that working for the future is well worth it.

#### **Future Visitors' Center**





# RHODODENDRONS IN COLORADO GARDENS

Panayoti Peter Callas  
Ray Radebaugh

People from the northeast or northwest parts of our country know the spectacular beauty of rhododendrons in full bloom in the spring and the pleasing evergreen texture of their leaves through the winter. Most people from Colorado are not familiar with rhododendrons and don't recognize one when they see it, simply because of the rarity of these plants in this state. In fact, it's possible to pick out a native of Colorado, as opposed to someone who recently moved here from the east or northwest, simply by the comment he makes on seeing a rhododendron here. The native says, "What kind of plant is that?" whereas the other says "I didn't know rhododendrons could be grown here."

The rhododendron has so much to offer in the way of spectacular flowers, form, and leaf-texture that some local gardeners are making every effort to grow them in Colorado. These efforts have met with outstanding success in many instances. Hopefully, this article will serve as a stimulus for many others to go out and try their hands in this effort and also to serve as a guide in getting the beginner off in the right direction. Rhododendron gardening is quite different in Colorado than it is in Oregon or New Jersey, and the authors hope you can learn a few things from these remarks so that you can avoid some of the costly mistakes we have made.

When the *Denver Post* weather box assures us that "'tis a privilege to live in Colorado," it is speaking for people, perhaps, but certainly not for rhododendrons. The litany Coloradoans recite about why they like the state's weather is in effect a checklist of why rhododendrons are difficult to grow here: year around low humidity, intense sun, frequent winter warm spells, patchy snows, infrequent rains. These are all obstacles to growing rhododendrons well.

Some members of the heath family, or *Ericaceae*, like kinnikinnick (*Arctostaphylos uva-ursi* Spreng.) and dwarf huckleberry (*Vaccinium* L. spp.) have adapted to, even overwhelmed much of our foothill and mountain area. But rhododendrons, the largest and most spectacular genus of the heath family are invariably plants of cool, much more humid mountain regions of the world. One species of rhododendron actually does grow naturally in the northwestern part of the state. This spindly, deciduous rhododendron is probably the most intractable and least ornamental of the score or more species of rhododendrons that grow in America. Typically, even the cascade azalea, or mountain misery as it's more accurately called (*Rhododendron albiflorum* Hook.) is limited to the wettest, coldest, most humid high mountain valleys in its overall range in the Rocky Mountains. Collected plants usually

wither in a matter of weeks in the dry heat of the foothills.

The rhododendron genus is vast and variable. One section comprises vinelike epiphytes and trees in Malaysia and Indonesia. Aside from these sub-tropical monstrosities there are a few that have adapted to the northernmost arctic tundra like the Lapland rosebay (*R. lapponicum* Wahlenb.). But the bulk of the hundreds of species of rhododendron is limited to temperate regions of the northern hemisphere, even more so to those regions almost mythical for rain, humidity, and lofty elevations.

Only a few lime-tolerant species grow in the Alps. Many more are to be found in the rainy Caucasus and the mountains of Japan. But the center of distribution for the genus is unquestionably the highest mountains of Central Asia: the Himalayas, the Chinese, Tibetan, and Burmese Alps. Here rhododendrons form immense trees in the deep valleys, sometimes with

the life zones in the mountains where rhododendrons would form a never-ending forest of undershrubs. They sometimes would dominate the landscape altogether for miles on end and thousands of feet of increasing altitude until forming immense carpets comprising dozens of species of dwarf, twiggy, alpine bushlets that extend to the limit of plant growth at almost twenty thousand feet.

The hundreds of species and countless varieties of Asiatic rhododendrons are the mainstay of the large cult of rhododendron growers in the Pacific northwest and England where a similar mild, humid climate can often delude the plants into forgetting their native heights. At this point, an ambitious local gardener might blink and jump to the conclusion that our higher altitude in Colorado might be a boon to growing some of these Asiatic rhododendrons. To a point this might be true. The higher intensities of ultraviolet light and other forms of cosmic radiation

*Rhododendron* 'Prof. Amateis'



epiphytic species perching on their cousins. The great Asian plant collectors of the early Twentieth Century — Kingdon Ward, Reginald Farrer, E. H. Wilson, George Forrest — never tired of describing in their books the kaleidoscopic variations of color, size, and form of rhododendrons they saw on their travels. From the trees in the subtropic valleys, more and more species would appear as they would progress up through

at even our five thousand feet might have a beneficial effect on the bacterial and fungal root associations all rhododendrons employ in place of root hairs.

Whatever virtue our altitude may have, its beneficial effects are more than outweighed by the drawbacks of our continental climate. Even at ten thousand feet, the Himalayas enjoy a subtropical climate with few frosts. Due to the more southerly latitude both summers and

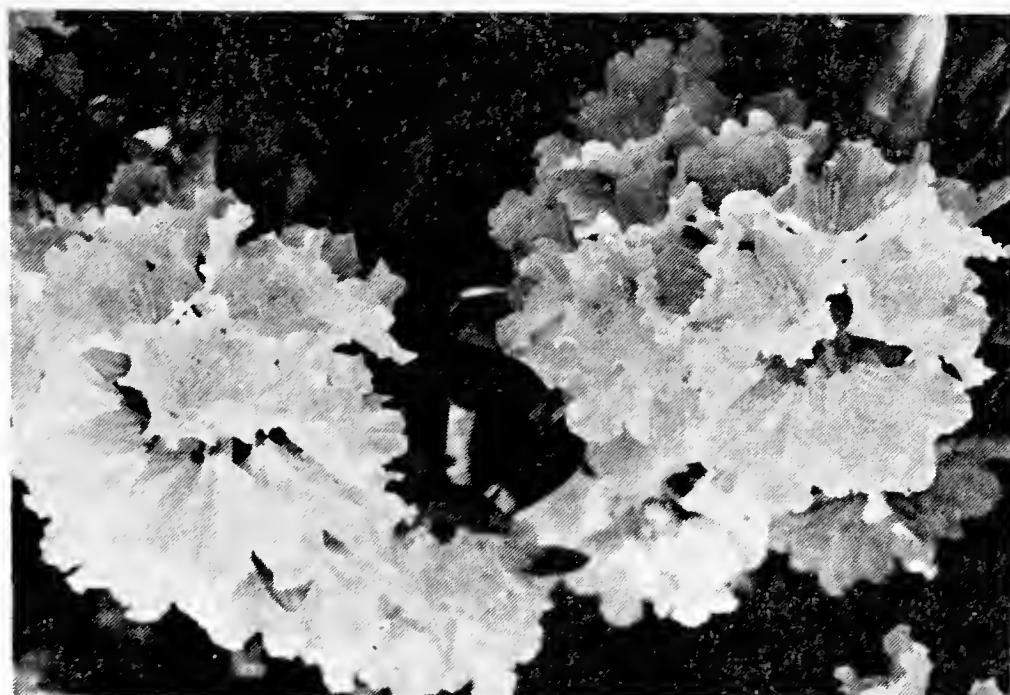
winters are milder in the central Asian mountains so that even at mountaintop levels, extreme lows aren't much greater than they are at the foot of the Rockies. In addition, the cooling effect of daily mists and rains is incalculable. Temperatures in the eighties are unusual, and ninety or one hundred degree temperatures in the regions where evergreen rhododendrons thrive best are unheard of. With the onslaught of the coldest temperatures in fall and winter, even the tallest rhododendrons are already blanketed with the deep snows that characterize the Asian mountains. What this means is that a rhododendron from 15,000 feet in the Himalayas may not be hardy enough to withstand the extreme cold of the snowless spells in our winters, or the extended dry heat of our summers.

As a result most rhododendrons grown in the colder parts of the United States are invariably hybrids derived from the hardiest American, Japanese and Caucasian species. The famous 'Carolina Rosebay' (*Rhododendron catawbiense* Michx.) from the Roan mountains of North Carolina and the more widespread Carolina rhododendron (*R. carolinianum* Rehder) from the lowlands of the southeast are the two most important parents of hardy rhododendrons. The related Pontic rhododendron (*R. ponticum* L.) from the Caucasus served as another parent during the late Nineteenth Century for evolving the so-called "ironclads", rhododendrons that because of their parentage could withstand both the extreme muggy heat of midwestern summers and extreme winter lows.

These rather dowdy ironclads were superseded in England, where they were largely developed, by the influx of much more glamorous Asian species around the turn of the century. A few decades later the Asiatics began to supplant the ironclads in the Pacific northwest. In the northeast and midwest, however, the ironclads are still the most frequently planted rhododendrons.

At this point, I might say a word about the difference between azaleas and rhododendrons. Both are members of the same genus, *Rhododendron*. Since there exist evergreen azaleas and deciduous rhododendrons, persistence of leaf is not diagnostic. A sounder botanical distinction is based on their respective growth patterns. Most rhododendrons produce a single flush of new growth right after flowering as mature plants — a few leaves along the axis of new growth, and then a whorl or rosette of leaves around the next year's flowering or growth bud. Azaleas are largely continuous growers, producing new growth in long leafy shoots all season long — even as mature plants. The rosette arrangement is less pronounced, as are the dormant flower buds. The difference in growth is probably the result of their ecological and geographical origins. Azaleas are primarily found in lowlands. By their constant growth they reveal their subtropical antecedents, whereas rhododendrons are predominately plants of snowy regions where a single flush of growth is all that can be safely achieved in the short growing season.

Although they are lowland plants, more azaleas proportionate to the total number of species can be successfully grown in the Colorado plains area than rhododendrons. The main concentrations of wild azaleas are found in the United States and Japan — with a few outliers in the lowlands of China and the Caucasus. Azaleas invariably come from hot-summer regions so they are definitely heat-tolerant. Even the more southerly and coastal forms have a degree of genetic hardiness, so that only a small percentage cannot tolerate subzero temperatures. In addition, since most azaleas are deciduous and winter dormant, they are excellent plants to experiment with before trying the more demanding evergreen rhododendrons. Most evergreen azaleas are definitely tender — but even here local gardeners have found



*Rhododendron yakusimanum* x 'Mars'

exceptions.

In the last few decades, a number of developments in rhododendron growing and hybridizing are revolutionizing the nature and types of rhododendrons grown in the colder regions of the United States and Europe. Gardeners traveling in England and the Pacific coast states have become a little disenchanted with the uniformity of leaf and muddy colors of the ironclad rhododendrons. An audience has evolved in the midwest that's interested in new and different types of rhododendrons. Nurserymen and hybridizers have expended years trying to cross hardier clones of ironclad species with the more variable and interesting Asiatics. David Leach, Shamarello, the Dexter Estate, and many other hybridizers have been spurred to satisfy the new demands. An example of the new hybrids is *Rhododendron* x 'Dora Amateis,' a cross between the Carolina rhododendron and *R. ciliatum* Hook f. from China. The resulting plant resembled *R. ciliatum* to such a degree in leaf and flower, growers were afraid it would also prove tender, since *R. ciliatum* is frost-damaged at ten degrees above zero. It has proven to be very hardy, however, and a plant has grown in Colorado for almost ten years with absolutely no damage to leaf or flowerbuds. Rarely do hybrids turn out so pat — but with time, more accidents

like this are bound to happen. *Rhododendron* x 'Ramapo,' another *R. carolinianum* cross, is a perfect replica of a Lapponicum series plant — only it is a reliable bloomer in our climate.

Another realm in which much experimentation has occurred has been in discovering and growing a wider variety of species in colder climates. Most Asiatic rhododendrons are definitely somewhat tender, but some species like *R. fortunei* Lindl. and *R. hippophaeoides* Balf. f. and W.W. Sm. have proven very tough. Growers have been looking to Japan, Korea, and the Caucasus as well to find species that differ from the typical *catawbiense-ponticum* ironclads. Dozens of species of rhododendrons and azaleas from these lands, like *R. dauricum* L., *R. mucronulatum* Turcz., *R. schlippenbachii* Maxim. and *R. smirnowii* Traut. have proven to be as hardy as the hardiest American species.

One of the most dramatic stories in rhododendron culture has been the introduction and subsequent apotheosis of the Yaku Island rhododendron (*Rhododendron yakusimanum* Nakai.) This rhododendron has helped revolutionize cold-climate rhododendron growing.

("Growing Rhododendrons in Colorado" will be continued in the Spring issue.)



# LOOKS AT BOOKS

*Plants of Zion National Park* by Ruth Ashton Nelson, drawings by Tom Blaue, Zion Natural History Association, Springdale, Utah, 1976. 333 pages. \$8.00 paperback, \$10.00 hard bound.

My first reaction upon picking up Ruth Ashton Nelson's *Plants of Zion National Park* was "What a beautiful book!" With its generous margins, bright clear color pictures on nearly every page, and delightful line drawings it cries for reading whether or not one has plants to identify. Then, after enjoying the pictures and feasting my eyes on the artistry of the make-up, I turned to the meat of the book, the plant descriptions.

Following a short but adequate discussion of the zones and habitats to be found in the Park come the simple easy-to-follow keys. One does not have to have studied botany to follow these. An illustrated glossary at the back of the book helps to explain the few technical terms used.

Every conspicuous plant in the area is covered, so that whatever one finds, he can usually put a name to it. Likely as not, he can find a picture, either a color closeup or a clear line drawing. Inconspicuous plants and those not of general

interest such as grasses are merely listed. Over 700 kinds of plants are included in the text — all known to exist in Zion. While the keys are made especially for the vegetation of the Park, the book should prove useful for any similar area in the southwest.

Another point that adds to the interest of the plant identifications is that there is often a short statement on the origin of the name or the story of the person for whom it was named.

One happy thought is the section devoted to a list of the more common roadside flowers by season and color — most useful to the visitor tied to his automobile for one reason or another.

To cap it all both end papers (front and back) carry colorful topographical maps of the sections of the Park.

I find that the book is an awkward size — it is a little too wide for easy handling in the field. However, if it were made narrower, there would go much of the white space that makes the general layout so attractive.

If you plan to visit Zion National Park, this book is a must. If you don't intend to go soon, it is still a pleasant book to browse through, if only to enjoy the pictures.

**Gilberta T. Anderson**



## INDEX – ANNUAL REPORT 1975

Board of Trustees, p.2  
Denver Officials, Inside Front Cover  
Director's Annual Report, p. 7  
Construction, p. 7; Plantings and Acquisitions, p. 9; Testing of Plants, p. 10; Plant Sale, p. 10; Lobby Court Display, p. 10; Children's Garden, p. 11; Chatfield Arboretum, p. 12; Education Program, p. 12; Use of Facilities, p. 13; Publications, p. 14; Helen Fowler Library, p. 14; "Doctor Green", p. 14; Herbarium, p. 15; Mycology Laboratory, p. 15; High School Internship Program, p. 15; Personnel, p. 16  
Financial Statement, p. 35  
History of Botanic Gardens, p. 17  
Memorial Gifts, p. 36  
President's Report, p. 4  
Staff, p. 3  
Volunteers, p. 37  
Standing Committees, p. 38

Note: The author wishes to correct a misstatement on page 25: the caissons penetrate the earth for 25 feet, not 250.

## SUBJECT INDEX 1976

### APOLOGIA

We're Sorry, Summer p. 44

### ARBORETUM

The Chatfield Arboretum, Newell M. Grant, Winter p. 127

### BOOKS

Book Review, *The Complete Handbook of Pruning*, Ed. by Roger Grounds, Glenn Park, Spring p. 31

Book Review, *Grow Native: Landscaping with Native and Apt Plants of the Rocky Mountains*, Sam Huddleston and Michael Hussey, William G. Gambill, Jr. Spring p. 31

Book Review, *Plants of Zion National Park*, Ruth Ashton Nelson, Gilberta T. Anderson, Winter p. 134

Book Review, *Wild Flower Name Tales*, Berta Anderson, Ruth A. Nelson, Summer p. 64

Colorado Authors Honored, Solange Gignac, Autumn p. 104

### BOTANISTS

Botanists on the Colorado Peaks, Josephine Robertson, Winter p. 106

The Clements in Colorado, Moras L. Shubert, Autumn p. 96

## COLORADO CENTENNIAL

About Seeds and Seedsmen, Bernice E. Petersen, Summer p. 40  
Botanists on the Colorado Peaks, Josephine Robertson, Winter p. 106  
Bur Oak, Helen Marsh Zeiner, Autumn p. 80  
Cemetery to Conservatory, Part I, The City Cemetery, Louisa Ward Arps, Summer p. 34  
Cemetery to Conservatory, Part II, Cheesman Park, Louisa Ward Arps, Autumn p. 82  
Centennial Tree Watching, E. Alan Rollinger, Autumn p. 102  
Colorado's Horticultural Pioneers, Bernice E. Petersen, Autumn p. 66  
Harison's Yellow Rose, Helen Marsh Zeiner, Spring p. 11  
Old Fashioned House Plants, Helen Marsh Zeiner, Spring p. 2  
Peach, Helen Marsh Zeiner, Summer p. 47  
Potato, Helen Marsh Zeiner, Winter p. 121

## CONSERVATORY

Meet Our New Conservatory Supt., Moras L. Shubert, Spring p. 30  
People Are Generous, Andrew Pierce, Winter p. 124

## DENVER BOTANIC GARDENS

The Chatfield Arboretum, Newell M. Grant, Winter p. 127  
The Garrison Frieze, Virginia Shaw, Spring p. 16  
Hildreth Garden – "Room" With a View, Glenn Park and Herbert Schaal, Spring p. 22  
Meet Our New Conservatory Superintendent, Moras L. Shubert, Spring p. 30  
People Are Generous, Andrew Pierce, Winter p. 124

## EXOTICS OF COLORADO

Bur Oak, Helen Marsh Zeiner, Autumn p. 80  
Harison's Yellow Rose, Helen Marsh Zeiner, Spring p. 11  
Peach, Helen Marsh Zeiner, Summer p. 47  
Potato, Helen Marsh Zeiner, Winter p. 121

## FALL COLOR

Autumnal Splendor, William G. Gambill, Jr., Autumn p. 89

## FOCUS ON . . . .

Plants in the Boettcher Memorial Conservatory, Peg Hayward  
*Brassaia actinophylla*, Spring p. 18  
*Coccoluba uvifera*, Autumn p. 100  
*Sapodilla*, Summer p. 56

GARDENS

- Bicentennial Garden Plants and Ideas, Glenn Park, Summer p. 45
- British Garden Tour, Josephine Robertson, Autumn p. 76
- The Herb Garden, Gloria Falkenberg, Summer p. 61
- Rhododendrons in Colorado Gardens, Panayoti Peter Callas and Ray Radebaugh, Winter p. 130

HORTICULTURAL THERAPY

- Horticultural Therapy, Kathleen Neer, Winter p. 115

HORTICULTURISTS

- About Seeds and Seedsmen, Bernice E. Petersen, Summer p. 40
- Colorado's Horticultural Pioneers, Bernice E. Petersen, Autumn p. 66

HOUSE PLANTS

- Cacti as House Plants, Jack Holland, Summer p. 58
- Flowers for Container Gardening, Dale Boyle, Summer p. 57
- Old Fashioned House Plants, Helen Marsh Zeiner, Spring p. 2

INDICES

- Index, Annual Report 1975, Winter p. 135
- Author Index, 1976, Winter p. 136
- Subject Index 1976, Winter p. 135

PLANTS

- Ground Covers for Colorado, George W. Kelly, Summer p. 50
- Plant Portraits, Bernice E. Petersen, Spring p. 20
- Rhododendrons in Colorado Gardens, Panayoti Peter Callas and Ray Radebaugh, Winter p. 130

POISONOUS PLANTS

- European Poison Hemlock (*Conium maculatum*), Richard S. Mitchell and James R. Jackson, Spring p. 26

ROSES

- A Rose is a Rose is a Rose — or Is It? Michael B. Pulman, Spring p. 8
- Roses to Grow in Denver Gardens, Joan G. Franson, Winter p. 110

TREES AND SHRUBS

- Centennial Tree watching, E. Alan Rollinger, Autumn p. 102
- Shrubs for the High and Dry Country, Irene Mitchell, Spring p. 13

TRIBUTES

- The Krohns — A Helpful Influence, Virginia McConnell Simmons, Winter p. 119
- A Resolution in Honor of Mrs. Ruth Porter Waring, Board of Trustees, Spring p. 15

WILD FLOWERS

- Alpine Anemone, Marjorie L. Shepherd, Summer p. 62

AUTHOR INDEX 1976

Author	Page(s)
Anderson, Gilberta T. . . . .	134
Arps, Louisa Ward . . . . .	34, 82
Board of Trustees . . . . .	15
Boyle, Dale . . . . .	57
Callas, Panayoti Peter . . . . .	130
Falkenberg, Gloria . . . . .	61
Franson, Joan G. . . . .	110
Gambill, William G., Jr. . . . .	31, 89
Gignac, Solange . . . . .	104
Grant, Newell M. . . . .	127
Hayward, Peg . . . . .	18, 56, 100
Holland, Jack . . . . .	58
Jackson, James R. . . . .	26
Kelly, George W. . . . .	50
Mitchell, Irene . . . . .	13
Mitchell, Richard S. . . . .	26
Neer, Kathleen . . . . .	115
Nelson, Ruth A. . . . .	64
Park, Glenn . . . . .	22, 31, 45
Petersen, Bernice E. . . . .	20, 40, 66
Pierce, Andrew . . . . .	124
Pulman, Michael B. . . . .	8
Radebaugh, Ray . . . . .	130
Robertson, Josephine . . . . .	76, 106
Rollinger, E. Alan . . . . .	102
Schaal, Herbert R. . . . .	22
Shaw, Virginia . . . . .	16
Shepherd, Marjorie L. . . . .	62
Shubert, Moras L. . . . .	30, 96
Simmons, Virginia M. . . . .	119
Zeiner, Helen M. . . . .	2, 11, 47, 80, 121

**DENVER BOTANIC GARDENS, INC.**  
**A NON-PROFIT ORGANIZATION**

**OFFICERS**

Mr. John C. Mitchell ..... President  
Mr. Edward T. Connors ..... Vice-President  
Mr. Richard A. Kirk ..... Vice-President  
Mrs. James J. Waring ..... Vice-President  
Dr. Moras L. Shubert ..... Secretary  
Mrs. Frank B. Freyer, II ..... Assistant Secretary  
Mr. Alexander L. Kirkpatrick ..... Treasurer

**STAFF**

Dr. William G. Gambill, Jr. .... Director  
Mr. Glenn Park ..... Assistant Director  
Mr. Andrew Pierce ..... Conservatory Superintendent  
Ms. Beverly M. Nilsen ..... Botanist-Horticulturist  
Mr. Dudley H. Schwade ..... Botanist-Horticulturist  
Miss Margaret Sikes ..... Education Director  
Ms. Solange Gignac ..... Librarian  
Miss Lucy Crissey ..... Honorary Librarian  
Dr. D. H. Mitchel ..... Honorary Curator of Mycology  
Mrs. J. V. Petersen ..... Honorary Editor of *The Green Thumb*  
Dr. Helen Zeiner ..... Honorary Curator of the Kathryn  
Kalmbach Herbarium

**ILLUSTRATION SOURCES**

Front Cover and Pages 126, 128, 129, Photos by Bill Anderson  
Pages 107, 108, Photos courtesy of Western History Department, Denver Public Library  
Pages 111, 113, Photos courtesy of George E. Rose Press Service  
Pages 116, 117, Photos courtesy of H. S. Plankinton, Jr., Central Chester County  
Vocational Technical School  
Pages 119, 120, Photos by Virginia Simmons  
Page 122, Drawing by Pauline Roberts Steele  
Pages 124, 125, Drawings by Janet Wingate  
Pages 131, 133, Photos by Ray Radebaugh  
Back cover, from *The Green Thumb* files.



# *The Green Thumb*

DENVER BOTANIC GARDENS  
909 YORK STREET  
DENVER, COLORADO 80206

NON-PROFIT  
ORG.

U.S. POSTAGE

PAID

Permit No. 205  
Denver, Colorado

DO NOT FOLD

ADDRESS CORRECTION  
REQUESTED RETURN  
POSTAGE GUARANTEED



Botanic Gardens House

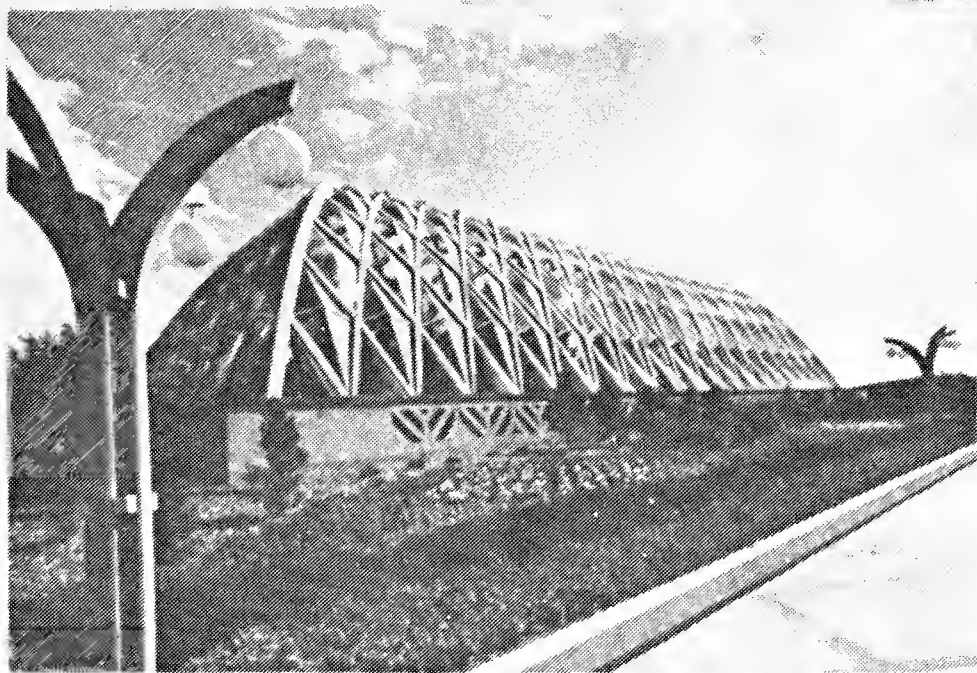
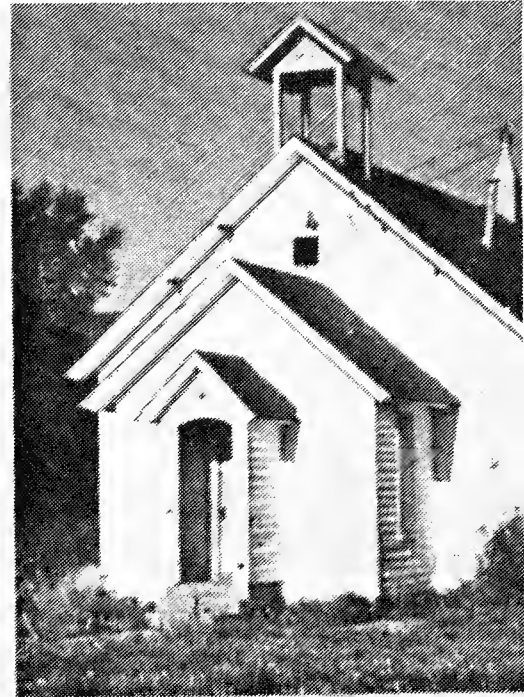
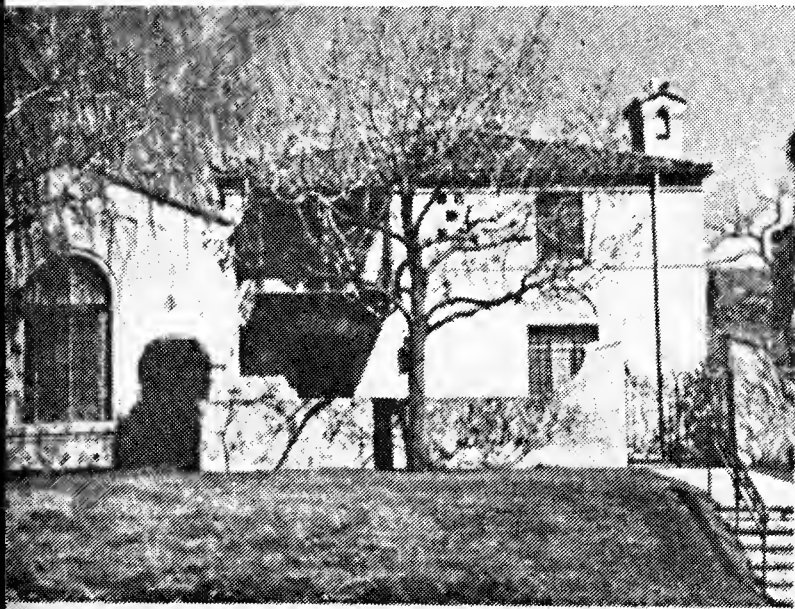
DENVER BOTANIC GARDENS  
DENVER, COLORADO

*This is a non-profit organization supported by municipal funds and private donations.*

Denver Botanic Gardens maintains a collection of living plants, both native and exotic, for the purpose of acquiring, advancing and spreading botanical and horticultural knowledge.

# DENVER BOTANIC GARDENS

ANNUAL REPORT FOR 1976



## EXPANSION 1976



DENVER OFFICIALS

William H. McNichols, Jr. . . . . Mayor

Joe Ciano, Jr. . . . . Manager of Parks and Recreation Dept.

City Council:

Edward F. Burke, Jr., Elvin R. Caldwell, Salvadore Carpio, Cathy Donohue, Stephen P. Grogan, Paul A. Hentzell, Kenneth M. MacIntosh, James J. Nolan, Larry J. Perry, Cathy Reynolds, William R. Roberts, M. L. Sandos, L. Don Wyman.

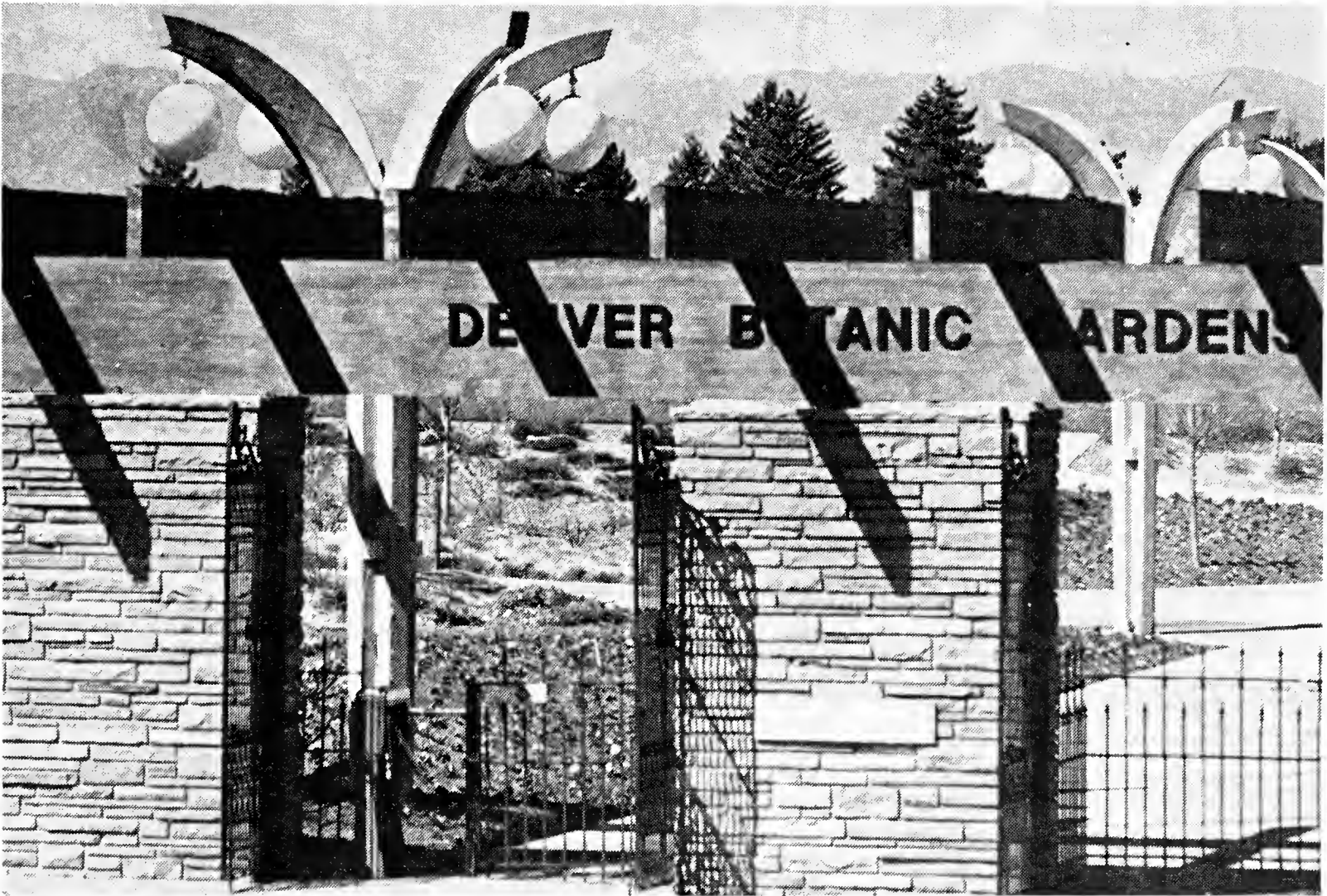
COVER

The Gardens in the Community

ANNUAL REPORT FOR 1976

Prepared and published by the  
Editorial Committee  
and  
Denver Botanic Gardens Staff  
William H. Anderson, Jr. Ed.D.  
Gilberta T. Anderson  
Editors





The East Entrance

# DENVER BOTANIC GARDENS

## 1976

### CONTENTS

Denver Officials . . . . .	Inside Cover	Publications . . . . .	18
Board of Trustees . . . . .	2	Helen Fowler Library . . . . .	18
Staff . . . . .	4	“Doctor Green” . . . . .	19
President’s Report . . . . .	6	Kathryn Kalmbach	
Director’s Report . . . . .	9	Herbarium . . . . .	19
Construction and Development		Mycology Laboratory . . . . .	20
of Physical Facilities . . . . .	9	Trip to Great Britain . . . . .	21
Property Acquisition . . . . .	11	Student Internship Program . . . . .	21
Plantings and Acquisitions . . . . .	11	Personnel . . . . .	22
Seed Exchange . . . . .	14	Chatfield Arboretum . . . . .	23
Lobby Court Display . . . . .	14	Financial Statement . . . . .	26
Plant Give-away . . . . .	15	Memorial Gifts . . . . .	27
Plant Sale . . . . .	15	Volunteers . . . . .	28
Children’s and Youth Gardens . . . . .	16	Standing Committees . . . . .	29-32
Education Program . . . . .	16	Picture Credits . . . . .	Inside Back Cover
Use of Facilities . . . . .	18		



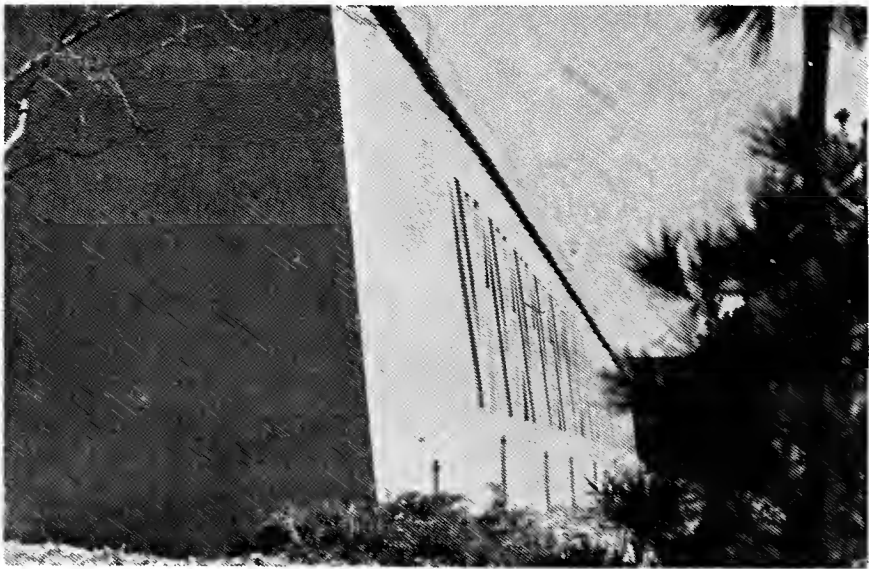
EXECUTIVE COMMITTEE OF THE BOARD OF TRUSTEES

Mr. John C. Mitchell	.....	<i>President</i>
Mr. Edward P. Connors	.....	<i>Vice-President</i>
Mr. Richard A. Kirk	.....	<i>Vice-President</i>
Mrs. James J. Waring	.....	<i>Vice-President</i>
Dr. Moras L. Shubert	.....	<i>Secretary</i>
Mrs. Frank B. Freyer II	.....	<i>Assistant Secretary</i>
Mr. Alexander L. Kirkpatrick	.....	<i>Treasurer</i>
Mrs. Donald C. Campbell		Dr. John R. Durrance

BOARD OF TRUSTEES – 1976

Mr. J. F. Baxter	Mr. Harry B. Kuesel
Mrs. John Brooks, Jr.	Mr. Lawrence A. Long
Mrs. Donald C. Campbell	Mr. William J. Lunsford
Mr. Edward P. Connors	Mr. John C. Mitchell
Dr. John R. Durrance	Mrs. Willett S. Moore
Mrs. John F. Falkenberg	Mrs. Graham B. Morrison
Mrs. Frank B. Freyer, II	Mr. Charles C. Nicola
Mrs. George H. Garrey	Mr. James C. Owen, Jr.
Mrs. Jess Gibson	Mrs. Norman F. Patrick
Mr. Newell M. Grant	Dr. Moras L. Shubert
Mr. O. Ben Haley, Jr.	Mr. William R. Thurston
Mrs. Richard W. Hanselman	Mrs. James J. Waring
Mr. Richard A. Kirk	Mrs. Theodore B. Washburne
Mr. Alexander L. Kirkpatrick	Mr. Kenneth G. Wilmore
Mrs. Robert M. Kosanke	

East Wall



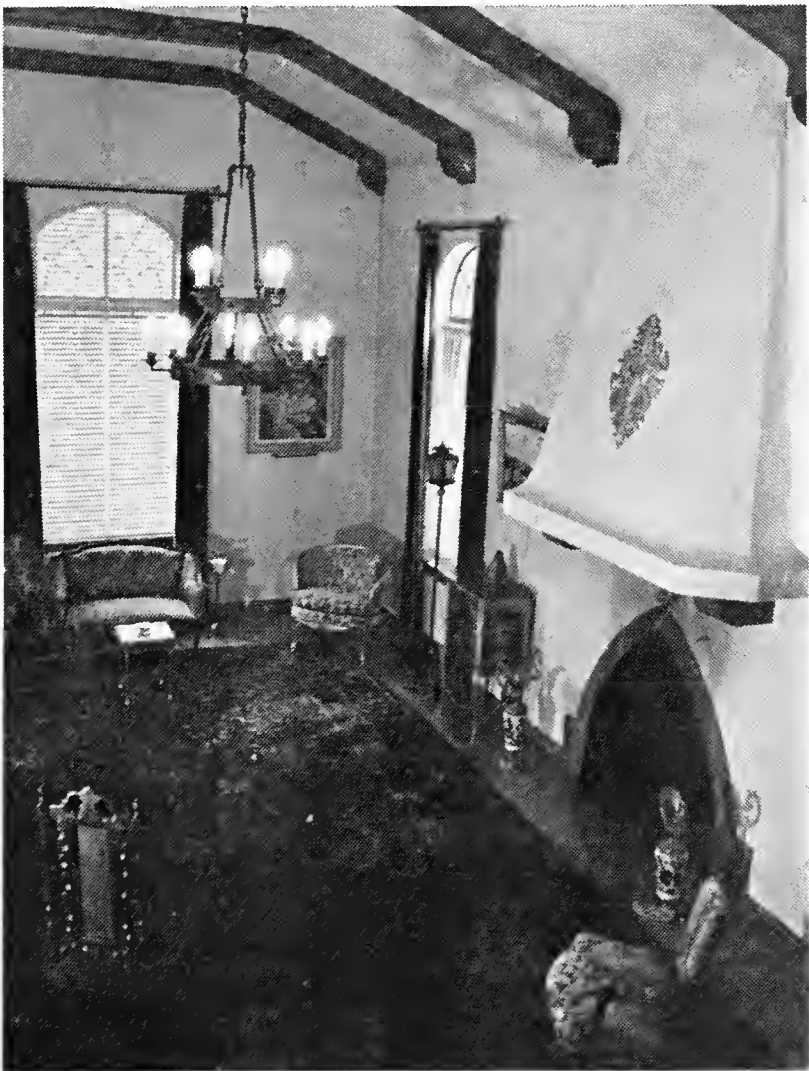
EX-OFFICIO TRUSTEES

- Dr. Kenneth Brink ..... *Head, Department of Horticulture  
Colorado State University*
- Mr. Joe Ciano, Jr..... *Manager, Parks and Recreation Department  
City & County of Denver*
- Mr. Herbert I. Jones ..... *President, Plains Conservation Center*
- Mr. William H. Kistler ..... *President, Denver Zoological Foundation*
- Mayor William H. McNichols, Jr. .... *Mayor, City & County of Denver*
- Mr. Allan R. Phipps ..... *President, Denver Museum of Natural History*
- Mrs. Walter G. Ruesch... *President, Colorado Federation of Garden Clubs*
- Mrs. D. L. Christenson ..... *President, Around the Seasons Club*
- Mrs. Herbert Glick ..... *President, The Associates*
- Mrs. Richard A. Kirk ..... *President, Garden Club of Denver*
- Mrs. Harry Wadsworth ..... *President, Denver Botanic Gardens Guild*

LIFE TRUSTEES

- Mrs. E. H. Honnen                      Mr. Hudson Moore, Jr.                      Dr. Robert Stearns

Interior, Krohn House



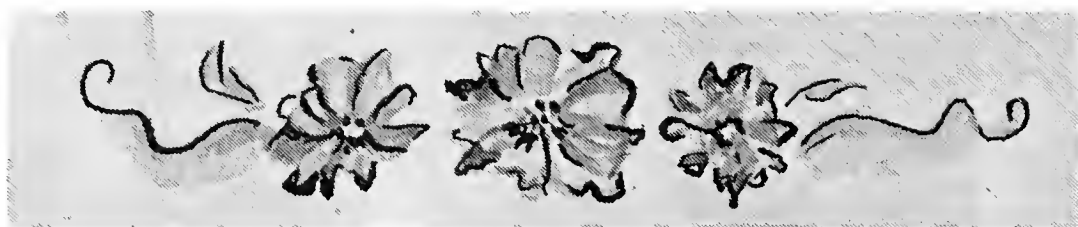
## STAFF

### Administrative

Dr. William G. Gambill, Jr.	.....	<i>Director</i>
Mr. Glenn Park	.....	<i>Assistant Director</i>
Mr. Andrew Pierce	.....	<i>Superintendent, Conservatory and Greenhouses</i>
Ms. Beverly M. Nilsen	.....	<i>Botanist-Horticulturist</i>
Mr. Lee Schwade	.....	<i>Botanist-Horticulturist</i>
Miss Margaret Sikes	.....	<i>Education Director</i>
Ms. Solange G. Gignac	.....	<i>Librarian</i>

### Conservatory, Greenhouses, Grounds, and Maintenance

Ken Okazaki	.....	<i>Grounds Foreman</i>
Richard Schimming	.....	<i>Plant Propagator</i>
James Carlson	.....	<i>Gardener-Florist</i>
Jerry Cathey	.....	<i>Gardener-Florist</i>
Frank Chavarria	.....	<i>Gardener-Florist</i>
Nancy Collins	.....	<i>Gardener-Florist</i>
Gary Davis	.....	<i>Gardener-Florist</i>
Larry Latta	.....	<i>Gardener-Florist</i>
Richard A. Martinelli	.....	<i>Gardener-Florist</i>
Sterling Price	.....	<i>Gardener-Florist</i>
Thomas Riley	.....	<i>Gardener-Florist</i>
David Woodward	.....	<i>Gardener-Florist</i>
Roy Nilsen	.....	<i>Carpenter</i>
Jerry Lehr	.....	<i>Maintenance Repairman</i>
Kenneth Coleman	.....	<i>Maintenance Mechanic</i>
Brian DeHaven	.....	<i>Maintenance Mechanic</i>
*Robert Radosevic	.....	<i>Maintenance Mechanic</i>
Frank Garcia	.....	<i>Utility Worker</i>
Dan Kruse	.....	<i>Utility Worker</i>
Mark Nieto	.....	<i>Utility Worker</i>
Frank Ragni	.....	<i>Utility Worker</i>
Alan Rumpeltes	.....	<i>Utility Worker</i>
Dennis Wong	.....	<i>Utility Worker</i>
Virginia Hayman	.....	<i>Clerk</i>



Office

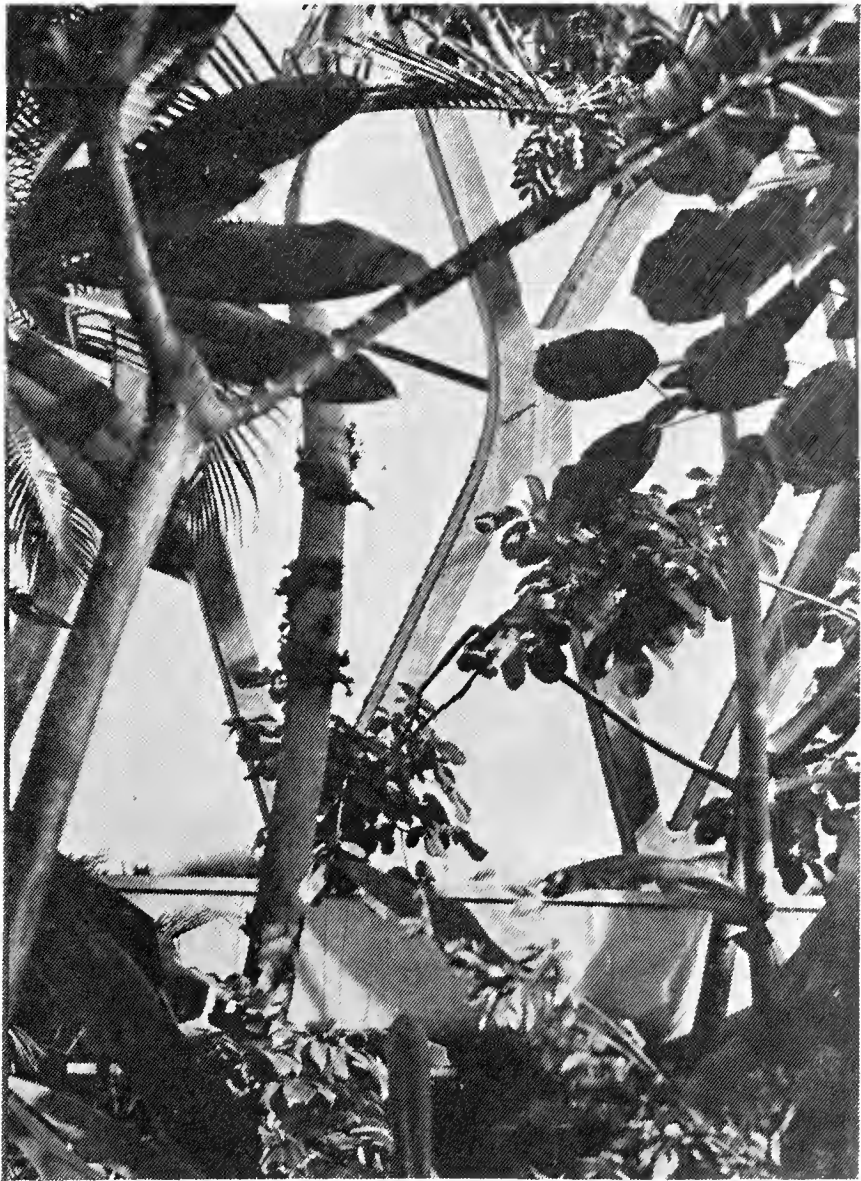
Ms. Iris O'Connor	Accountant
Miss Ruth Hawkins	Secretary to the Director
Mrs. Helen McCloskey	Receptionist
Miss Wanda Graham	Clerk, Typist
*Mr. Fidel Maestas	Clerk, Typist
*Mrs. Janet Wingate	Clerk, Typist

*\*Left before end of 1976.*

HONORARY STAFF

Miss Lucy Crissey	Honorary Librarian
Dr. D. H. Mitchel	Honorary Curator of Mycology
Mrs. J. V. Petersen	Honorary Editor of The Green Thumb
Dr. Helen Zeiner	Honorary Curator of the Kathryn Kalmbach Herbarium

Looking Up





# DENVER BOTANIC GARDENS 1976

## PRESIDENT'S REPORT

The past year has been an eventful one at Denver Botanic Gardens with a number of new records made and other interesting events, and I am pleased on behalf of the Trustees to report to the membership regarding them.

Although the Trustees are listed elsewhere, changes which have occurred since the last annual meeting of the board should be reported. Mr. Joe Ciano, Jr., Manager of Parks and Recreation of the City & County of Denver, has been elected for an unexpired term expiring in 1979. Dr. John R. Durrance, Mrs. George H. Garrey, Mrs. Jess Gibson, Mrs. Robert M. Kosanke, Mr. Lawrence A. Long, Mrs. Graham B. Morrison, Mr. Charles C. Nicola, Mrs. Theodore B. Washburne, and Mr. Kenneth G. Wilmore were re-elected to terms expiring in 1980. Mr. Alexander L. Kirkpatrick who has served as a Trustee and Treasurer since 1972 will retire from those offices in January. Our many thanks are due him for his capable service through those years. Mr. William J. Lunsford, elected a Trustee during the year, has been elected to the position of Treasurer as well. Thanks are due to the entire Board of Trustees for their faithful and effective interest.

Membership reached a new high, and as of year end was 3,046, an increase of 10% over last year. Membership dues have amounted to \$43,496, also a new high, and provided most necessary assistance to our program. Growth in membership, of course, is an indication of acceptance of our program, and it is hoped that membership will continue to grow as the public becomes more aware of the scope and excellence of this program.

Also at a new high was attendance at 275,779 persons as recorded at the turnstile at the east gate. This is approximately an 18% increase over last year and marks a distinct turnabout from the slowdown that occurred following the gasoline shortage of 1974. Although the west gatehouse has now been completed, and certainly might have been expected to facilitate greater attendance, budgetary restrictions have been such that it has not been possible to open this gate. The number of persons taking advantage of the educational program, conservatory tours, and meeting room facilities is growing to the extent that these facilities are becoming overtaxed, and all requests for use of them cannot be filled.

A new high was reached also in the plantings, both inside and out. The conservatory-greenhouse complex had a grand total of 890 additions made during the year. This included 341 different varieties added to the general collection, 282 orchids, 141 cactus and succulents, and 126 bromeliads. In the outside gardens, in which plantings over the past few years now are beginning to be much in evidence, there were some 189 different varieties of perennials, shrubs, and trees added to the display areas, and 904 different varieties went into the propagation area for future plantings. The beauty of these plantings in addition to their botanical interest is becoming more and more apparent each year. We are watching with interest the plantings in the Hildreth Garden and the preparations for the lilac garden in the south central portion of the York Street gardens. The two major areas still to be completed are in the far western section, but they are substantial undertakings and must await funding. These are the Rock — Alpine Garden, in the southwest, and the Japanese Garden in the northwest corner.

Support of Denver Botanic Gardens, as an agency of the City & County of Denver, through the budget of the city has continued at approximately the same level as last year. A budget of \$529,000 compares with \$530,400 in 1975, virtually unchanged. This budget provides for the basic maintenance of the gardens, the expense of which, of course, is growing as the gardens are expanded and inflationary forces work. The stringency of budget conditions has required this level figure, which in fact is being reduced by 15% for 1977, calling for a serious reduction of personnel and supplies, in common with the budgets of other city agencies. Our board and staff is determined to operate our program at the highest level possible under these restrictions, cooperating with the City administration during this difficult period. It is hoped that other avenues of support can be developed to compensate in part, and that City support will increase in the future.

The operating budget of Denver Botanic Gardens, Inc., representing funds privately raised through dues, gifts, grants, and contributions, amounted to \$234,000. This supplements City-provided operating funds and also may provide capital funding to a limited degree. Included in these figures is \$61,650 contributed by the Associates representing the results of their many vital efforts to support the Gardens, for which

#### **Bi-centennial, Centennial Garden**



we are most grateful. Not included in these figures is a bequest under the will of Mr. David H. Krohn consisting of the house and furnishings at 790 Gaylord Street for use by the Gardens as a home for the Director. This was the gracious residence of Mr. and Mrs. Krohn who had been longstanding supporters of Denver Botanic Gardens.

In order to retain the option of extending the Children's Garden or providing additional parking in future years, it was necessary to purchase during the year most of the properties to the north of the Children's Garden between York and Josephine Streets and Eleventh Avenue. Twelve and one-half lots were involved in this acquisition program at a cost of slightly in excess of \$300,000. The existing houses are being maintained on a rental basis sufficient to cover debt service involved in their purchase. This required the expenditure of funds needed in the operation of the Gardens, but it was felt that the opportunity to acquire this property at a later date was extremely uncertain.

The children's garden program in the Ruth Porter Waring Children's Gardens on York Street entered its 17th year, and that at Barrett School at 2900 Jackson Street started its 2nd. The popularity of these gardening programs and provision for their possible expansion indicated the need to purchase the property mentioned above. During the past year the area to the north of Boettcher Memorial Center has been developed for gardening programs for older youths. Ninety-eight youths were enrolled in the Ruth Porter Waring Youth Gardens and 61 at the Barrett School.

During the year, leasing from the Corps of Engineers of the Chatfield Arboretum area by the City & County of Denver for use of Denver Botanic Gardens was completed, and some initial development was accomplished under the direction of the Chatfield Committee. A grant of funds received under the Colorado Land and Water Fund under the Bureau of Outdoor Recreation program, which must be matched with privately raised funds, is being utilized to further this development. The old school house has been moved to the parking lot area for remodeling as an interpretive center. Plantings along the entrance road will be started this year although any significant amount of planting must await the completion of a master plan for the arboretum. The development of a sufficient water supply will be a major consideration over the next few years.

Although the completion of the York Street Gardens is of primary importance, the development of the Chatfield Arboretum will add another dimension to Denver Botanic Gardens. Chatfield will take its place along with the Mount Goliath Unit, the Bear Creek Unit, and the York Street gardens in providing the variety of situations and growing conditions offered by this region.

On behalf of the Board of Trustees I wish to here record our continuing gratitude to the Mayor and City Council, to the Manager of Parks and Recreation and his staff, to our own loyal staff, and to the hundreds of volunteers, who all are responsible in one way or another for the progress which we are making. The thousands of hours of volunteer time which have been contributed by the Associates, the Guild, the Around the Seasons Club, and the Garden Club of Denver members are essential to the development of the Gardens and to our over-all program.

The year 1977 will be, I hope, a most successful year benefiting from the momentum which has been gathering in our program. We welcome your interest and support and hope that you will urge others to join with us in accomplishing our mutual purposes.

**John C. Mitchell**  
**President**

## DIRECTOR'S ANNUAL REPORT 1976

The Botanical Gardens Foundation of Denver was incorporated on February 3, 1951. In the 25 years since then the Denver Botanic Gardens has grown in beauty, in service, and in prestige to be a great institution as the horticultural center of the Rocky Mountain West. Its Silver Anniversary year was one of activity and continued growth. The Director is proud of the progress made and of the dedicated and diligent people who are responsible for it. He hereby expresses his gratitude for the fine cooperation and excellent work of the City and County Officials, the Department of Parks and Recreation, the Board of Trustees, the Membership, the Volunteers, and the staff. What follows is a brief report on the activities and progress in 1976.

Dr. William G. Gambill, Jr.  
Director

### Construction and Development of Physical Facilities.

Of major importance to the York Street Unit was the installation in 1976 of a sprinkler system to irrigate a large portion of the east one-half of the grounds. Areas covered during the year included the grass and flower beds around the parking lot between York and Josephine Streets, around the conservatory, horticultural hall, the amphitheater, and the youth garden, between the east fence and York Street, between the Boettcher Memorial Center and Botanic Gardens House, the herb gardens and surroundings. It is estimated that this installation covers at least one-third of the irrigable area in the unit.

All the work was done by Botanic Gardens staff members under the direction of Jerry Lehr who is the maintenance supervisor.

After selection of the area needing irrigation, controls can be set for the time the system will turn on and the length of time it will operate. The watering can be programmed for two weeks. Usually the automatic system is operated for 15 to 20 minutes at a time three times a week. It is designed to use the minimum amount of water necessary to keep the plants in good condition without waste. A major article in the April 16, 1977 issue of *The Denver Post* described the system in detail.

Some 35,000 feet of pipe and a large number of sprinkler heads were installed, as well as 15,179 small fittings and 10 control stations. The electrical lines and equipment to operate the system were also put in place.

The structural work on the Hildreth Garden was completed during the year (see description in 1975 Annual Report) and planting will be continued in 1977.

Use of the turf mound as designed originally proved impracticable and a new turf demonstration area, adjoining the Demonstration Vegetable Garden, was laid out in 27 framed plots, each 10 feet by 10 feet, for the growing and testing of selected grasses. The soil here was prepared by the application of compost, wood chips, sulphur (to bring the pH down from 8.3 to about 7.3) and "Turface" — a sand-like calcined clay — after which it was plowed and roto-tilled. Some 50 kinds of grass seed are on hand at Botanic Gardens for testing. Ten of these are native grasses such as buffalo and western wheat, which are becoming more and more important as the water supply dwindles. Planting will begin in May of 1977.



Botanic Garden Activities  
and Scenes — 1976



## DIRECTOR'S ANNUAL REPORT 1976

The Botanical Gardens Foundation of Denver was incorporated on February 3, 1951. In the 25 years since then the Denver Botanic Gardens has grown in beauty, in service, and in prestige to be a great institution as the horticultural center of the Rocky Mountain West. Its Silver Anniversary year was one of activity and continued growth. The Director is proud of the progress made and of the dedicated and diligent people who are responsible for it. He hereby expresses his gratitude for the fine cooperation and excellent work of the City and County Officials, the Department of Parks and Recreation, the Board of Trustees, the Membership, the Volunteers, and the staff. What follows is a brief report on the activities and progress in 1976.

Dr. William G. Gambill, Jr.  
Director

### Construction and Development of Physical Facilities.

Of major importance to the York Street Unit was the installation in 1976 of a sprinkler system to irrigate a large portion of the east one-half of the grounds. Areas covered during the year included the grass and flower beds around the parking lot between York and Josephine Streets, around the conservatory, horticultural hall, the amphitheater, and the youth garden, between the east fence and York Street, between the Boettcher Memorial Center and Botanic Gardens House, the herb gardens and surroundings. It is estimated that this installation covers at least one-third of the irrigable area in the unit.

All the work was done by Botanic Gardens staff members under the direction of Jerry Lehr who is the maintenance supervisor.

After selection of the area needing irrigation, controls can be set for the time the system will turn on and the length of time it will operate. The watering can be programmed for two weeks. Usually the automatic system is operated for 15 to 20 minutes at a time three times a week. It is designed to use the minimum amount of water necessary to keep the plants in good condition without waste. A major article in the April 16, 1977 issue of *The Denver Post* described the system in detail.

Some 35,000 feet of pipe and a large number of sprinkler heads were installed, as well as 15,179 small fittings and 10 control stations. The electrical lines and equipment to operate the system were also put in place.

The structural work on the Hildreth Garden was completed during the year (see description in 1975 Annual Report) and planting will be continued in 1977.

Use of the turf mound as designed originally proved impracticable and a new turf demonstration area, adjoining the Demonstration Vegetable Garden, was laid out in 27 framed plots, each 10 feet by 10 feet, for the growing and testing of selected grasses. The soil here was prepared by the application of compost, wood chips, sulphur (to bring the pH down from 8.3 to about 7.3) and "Turface" — a sand-like calcined clay — after which it was plowed and roto-tilled. Some 50 kinds of grass seed are on hand at Botanic Gardens for testing. Ten of these are native grasses such as buffalo and western wheat, which are becoming more and more important as the water supply dwindles. Planting will begin in May of 1977.



Botanic Garden Activities  
and Scenes – 1976



The conversion of what was formerly a shade house into a fiberglass structure now used as a greenhouse (#1a) was completed in 1976, and a new style of bench was installed by the staff. Called "E" benches, the unique arrangement, jutting out from the wall of the house in a series of E-shaped forms, increases the bench space by more than 30% over the standard forms of long parallel rows previously used. The increase in bench space was so valuable that Greenhouses #1 and #2 were remodeled in this style during 1976.

Construction of the long pergola near the lilac and rose gardens was started in the summer of 1976 and will be completed in the spring of 1977.

Much work was done last year on preliminary plans for the Rock and Alpine Garden to be located in the southwest part of the grounds. Herbert R. Schaal, working out of the Fort Collins office of EDAW, Inc. is in charge of this new planning. Planning also progressed on such future units as the Fragrance Garden, the Lilac Garden, and the Plains Garden. The addition of a projected Japanese Garden in the northwest corner of the grounds will complete the York Street unit.

### Property Acquisition

The donation of the David H. Krohn home at 790 Gaylord Street for use as a home for the Director, and the acquisition of lots and houses south of 11th Avenue between York and Josephine Streets are covered in the President's Report.

### Plantings and Acquisitions

Over 1,000 trees and shrubs were planted by Botanic Gardens' staff on the grounds of the York Street Unit in 1976. Most of the large-sized trees, two-inches in diameter or more, were planted on each side of the main walks which circle the grounds. Among these were common and unusual varieties of: *Acer* (Schwedler maple), *Aesculus* (red horsechestnut), *Betula* (paper birch and weeping birch), *Carpinus* (American hornbeam), *Cercidiphyllum* (Katsura-tree), *Cercis* (redbud), *Crataegus* (the hawthorns), *Fraxinus* (green ash), *Ginkgo*, *Gymnocladus* (Kentucky coffee-tree), *Hamamelis* (witch-hazel), *Larix* (European larch), *Malus* (flowering crab-apple), *Nyssa* (black gum or black tupelo), *Ostrya* (hop-hornbeam or ironwood), *Phellodendron* (cork-tree), *Picea* (blue spruce), *Pinus* (Swiss stone, Austrian, white, and Scots pine), *Platanus* (London plane-tree), *Pyrus* (pear), *Robinia* (locust), *Sambucus* (blue elder), *Sophora* (Japanese pagoda-tree), *Sorbus* (European mountain-ash), *Ulmus* (Camperdown elm). Altogether, there were about 160 trees in the planting.

There were no less than 124 cotoneasters of 24 different varieties planted during the year, 300 *Euonymus coloratus*, 25 native *Mahonia*, 140 *Potentilla*, 175 mountain currant, and some 263 (60 varieties) of other shrubs. These trees and shrubs will form the background for the Botanic Gardens of the future.

More than 70,000 annuals were grown at Denver Botanic Gardens for the 1976 season in its own facilities by its own staff. Most of these were set out in beds at the York Street unit, making a spectacular display. Outstanding were the floral designs carrying out the Centennial-Bicentennial theme, using such symbols as: a pair of crossed American flags (13 star and 50 star) with gold trimmings, a series of white stars set in red and blue backgrounds, the liberty bell (complete with crack), the Colorado state flag, the figures for the dates, 1776 and 1876. Most of the plants used in these unusual arrangements were alyssum, marigold, petunia, ageratum, verbena, and geranium. Visitors who had seen similar displays in gardens all over the country



maintained that Denver Botanic Gardens' Bicentennial display was superior to all others.

Some of our established gardens were renovated during the year, bringing the over-all appearance to greater beauty and effectiveness.

A total of 128 rose plants (33 different varieties) was planted in the All-America Rose Selection test garden. There were 16 varieties of hybrid teas, 7 grandifloras, 7 floribundas, and two climbers. No additions were made to the rose display garden and the count remains at 27 varieties totaling 436 plants. Over one hundred miniature roses (in 13 varieties) including 'Baby Darling,' 'Cinderella,' and 'Lavender Lace,' came to the Gardens from the Denver Rose Society and will be planted in 1977.

The gladiolus display garden last summer contained several thousand (69 varieties); of these 38 were All-America selection test varieties. The All-America glads were in bloom from July until September. 'Lambkin,' a small ivory white from the Botanic Gardens display, was grand champion at the Greeley show, and 'Rudolph,' a rich, dashing red, aroused much interest. 'Spectacular,' a pure golden yellow surrounded by a rosy-red corona, lived up to its name. All of these were 1976 introductions.

The dahlia display garden was planted in May with a total of 360 plants representing 158 varieties. The dahlia beds, with some of the most beautiful blooms Denver has seen, were a dazzling sight from August into October. Among the beauties were 'Edna C.' a lovely light yellow, formal-decorative variety, and 'Frontispiece,' a straight cactus type, already the winner of many ribbons.

Twenty-five new varieties were added to the chrysanthemum collection, making a total of 54 varieties (1,350 plants) in the outdoor gardens. New ones ranged from 'Autumn Beauty' to 'Yorktown'.

The narcissus collection was augmented by 11 new varieties (100 of each) which brought the total to 100 different ones.

Extensive rehabilitation of the soil in the peony garden to provide for better drainage and better plant growth has improved this garden greatly. During the year 55 varieties were added to the 22 originals, and there are now 144 plants. Of these, 18 varieties are Japanese tree peonies, including 'Age of Gold,' 'Black Pirate,' 'Fuji-No-Akebona,' and 'Jitsu-Getsu-Nishiki.'

The sempervivum collection was increased to 49 varieties with the addition of 32 new varieties, 16 of which are named cultivars. The planting is located in the sunken garden area.

A new bed of tetraploid hemerocallis, consisting of 99 varieties, was added in 1976. The diploid hemerocallis display bed was increased by 38 new varieties during the year, making a total of 377 varieties. Among the new ones appear such intriguing names as 'Amazing Grace,' 'Buddha,' 'Doxology,' 'Green Glitter,' 'King of Kings,' 'Moment of Truth,' and 'Oh Holy Night.'

The soil in the iris garden was completely reconditioned and the garden was replanted in 1976. Two hundred and eighty-two new varieties were set out and the spuria and Siberian collections were expanded. At the end of the year the garden contained a total of 429 varieties of iris: six arilbred, 12 border bearded, 20 intermediate bearded, 29 miniature dwarf bearded, 38 miniature tall bearded, 41 standard dwarf bearded, 136 tall bearded, 82 Siberian, and 65 spuria.

Added to the Hammer Garden during the year were 300 *Lysimachia nummularia* L., 150 *Thymus* sp., and 40 *Vinca minor* L. plants.

A Full Year's Program  
at the Gardens



Of special interest in 1976 were the ten varieties of rhododendrons (three of each) planted in the area just east of Botanic Gardens House. Also planted near the house were three *Artemisia pontica* L. and four *Dicentra spectabilis* Lem. plants.

Eleven varieties of oriental poppies were received in 1976 and will be planted in 1977.

Plantings on the grounds which were not changed or added to during the year are not mentioned here.

There are 150 water plants established in the ponds and waterways at Denver Botanic Gardens, including 50 water lilies, made up of over 30 varieties, both tropical and hardy. Experiments are going on with bog and shallow water plants, including the papyrus and primrose willow. 1976 was the first year of experiment with overwintering tropicals. About 20% survived. In the spring 20 goldfish were placed in the water and in the fall the number had increased to 200. Of these some 25 were kept for breeders and the remainder went to ponds in Washington Park.

The President's Report contains a summary of plants added to the conservatory-greenhouse complex.

## Seed Exchange

In 1976 Denver Botanic Gardens joined other institutions of this kind in the happy custom of exchanging surplus seeds. A list of 100 subjects was issued. If only 20 interested establishments ask for seeds it will mean sending out some 2,000 packets. The job would be impossible without the work of the volunteers who helped in the greenhouses. This kind of seed exchange has been going on since 1682 when Leyden in Holland and Chelsea Physic Garden in England started the custom.

## Lobby Court Display

Our Centennial-Bicentennial year in the Lobby Court was ushered in by a beautiful show of both red and white poinsettias, featuring a large poinsettia tree at the back and an even larger one in the foreground. Following that came the pre-spring display of paperwhite narcissus, hyacinths, and blue and white cinerarias. Then came the spring daffodils, tulips, hyacinths and azaleas against a background of vivid green shamrocks to remind us of St. Patrick.

Plant Sale and Mother's Day were recognized jointly with a pink and white color scheme — mums in the border and carnations floating in the pool. Later, a Japanese garden welcomed the Ikebana Show. Gesneriaceae followed with the display focusing on the showy, velvety, bell-shaped blooms of the *Gloxinia*. Favorite of many visitors in the summer were the tuberous begonias in a riot of color — pink, salmon, peach, orange, and yellow — grouped on pillars and ties.

The fall *Chrysanthemum* display around the pool in the Lobby Court was perhaps the most stunning arrangement of the year. Scores of varieties varying in color, size, and arrangement were grown in Botanic Gardens' greenhouses under the expert guidance and planning of Nancy Collins. The excellence of this show was recognized by photographs and a write-up in *The Rocky Mountain News*.

In November a change of pace was provided by the epiphytes. These plants, often bromeliads, orchids, and ferns, grow upon other plants but are not parasites. Finally, the full circle of the year was completed with the poinsettias again, featuring



hanging baskets of white-flowered plants, with pure white cyclamens in the foreground. It was a year of interest and beauty in the Lobby Court.

## **Plant Give-Away**

Again, in 1976, members received bonus plants from the Gardens. Over 300 members showed up on May 14 and 15, presented their membership cards and invitations, and received, as you might guess, over 300 free plants.

## **Plant Sale**

The 1976 Plant Sale, held May 7 and 8, was more successful than ever. This annual affair, managed and staffed by over 400 volunteers, continues to grow in volume and quality and has become an important yearly event to gardeners of the area. Entire families come from the cities and towns of Colorado each year to obtain their spring stock of top grade plants. It was necessary, in 1976, to provide 15 check-out stands to handle the crowds of purchasers.

Through the Sale, the gardening public learns about a huge variety of locally grown plants suitable for this area; residents of Denver, of Colorado, and of nearby states are made aware of services and facilities available here, and essential funds beyond those budgeted by the city are raised to promote, develop, and operate Denver Botanic Gardens.

**Crowds at the Plant Sale**





## Children's and Youth Gardens

Prior to the beginning of its 17th year of operation the Children's Garden was officially named the Ruth Porter Waring Children's Garden, honoring one of Botanic Gardens' most generous and valued supporters. With Dr. James Jackson as instructor, 98 children (56 beginners and 42 advanced) were enrolled, starting indoor instruction in April and outdoor gardening in May. At the graduation program in September those children completing the work received certificates. They had earned them by producing bounteous crops of vegetables and flowers.

At the Barrett School children's garden, another established by Denver Botanic Gardens, Mrs. Irene Vittetoe instructed 61 children (36 beginners and 25 advanced) in a most successful second year program. The manually operated sprinkler system installed in part of this garden in the previous year was completed for the whole garden in 1976.

The new Youth Garden, for 7th grade through high school students, began its first year of operation on the tract of land at 11th and York, just north of the education building. A chain link fence was erected around the entire area and a garden shed on a concrete pad, housing tools and supplies, was constructed. The ground had been under a cover crop of perennial rye up until that time. An appeal for organic material for the soil brought an abundant supply of leaves, mostly from the city. These were applied to the garden in a thick layer, then plowed in, disked, and rototilled. Under the direction of Dr. James Jackson an exuberant harvest of vegetables, bordered by flowers, was produced in the first season. Twenty-two young people completed the work, including a series of outdoor classes, indicating much interest and the sure development of expert gardeners for the future.

Separate articles on the Chatfield Arboretum and other units of the Gardens appear elsewhere in this annual report.

## Education Program

Because of the popularity of the botanical and horticultural courses offered at Denver Botanic Gardens, it became necessary to limit the enrollment in all classes and most were over-subscribed soon after their announcement. Members receive quarterly schedules of the educational courses together with a registration form.

The following classes were taught during the year: General Botany for non-majors (Mrs. Steele), Landscape Horticulture (Mr. Rollinger and Mr. Watson), Hobby Greenhouse Management (Mr. Briggs), Use of the Library (Ms. Gignac), Vegetable Gardening (Mr. Latta — two classes and Mr. Hannigan — two classes).

Evergreen Walk — Cheesman Park (Dr. Gambill), Dried Flower Arrangement (Mrs. Kosanke), Soil and Plant Growth Relations (Dr. Jackson), Solar Energy Greenhouses (Mr. Wiegand), Bonsai (Mrs. Neil), Basic Taxonomy (Dr. Zeiner), Rose Symposium (Rose Society Members).

Plant Identification Field Trips — March through September (Dr. Brunquist), Identification of Shrubs (Dr. Feucht), Basic Flower Arrangement (Mr. Ashley), Home Landscaping (Mrs. Hyde), Field Trip to Balarat (Mrs. Toll), Tree Walk in Boulder (Mr. Robertson), Dyeing with Plants (Mr. Hoffman), Field Trip to Pawnee Grasslands (Mr. Pease), Biological Control of Garden Pests (Mr. Keenan), Trip to Reed Property (Mrs. Richards).

Field Trip to Colorado Springs (Mr. Long), Field Trips to Mt. Goliath (Mrs. Ash and Mrs. Shepherd), Walk in Auraria (Mr. Luebbers), Field Trip to Camp Freeman (Miss White), Canning and Freezing Garden Produce (Ms. Anderson), Technique of Collecting and Drying Flowers (Mrs. Kosanke), Herb Garden Walk (Mrs. Falkenberg), Basic Mushroom Identification (Mr. Grimes).

Chrysanthemum Culture (Mrs. Collins), Hydroponics (Mr. Novitt), Tour of Outside Gardens (Mr. Park), Field Trip to Adams County Nature Preserve (Mr. Ratzloff), Fruit Trees for Our Area (Mr. Gundell), Unusual Container Plants (Mr. Pierce), Guiding is Fun (Guides), Applewood Seed Company Tour (Mr. Milstein).

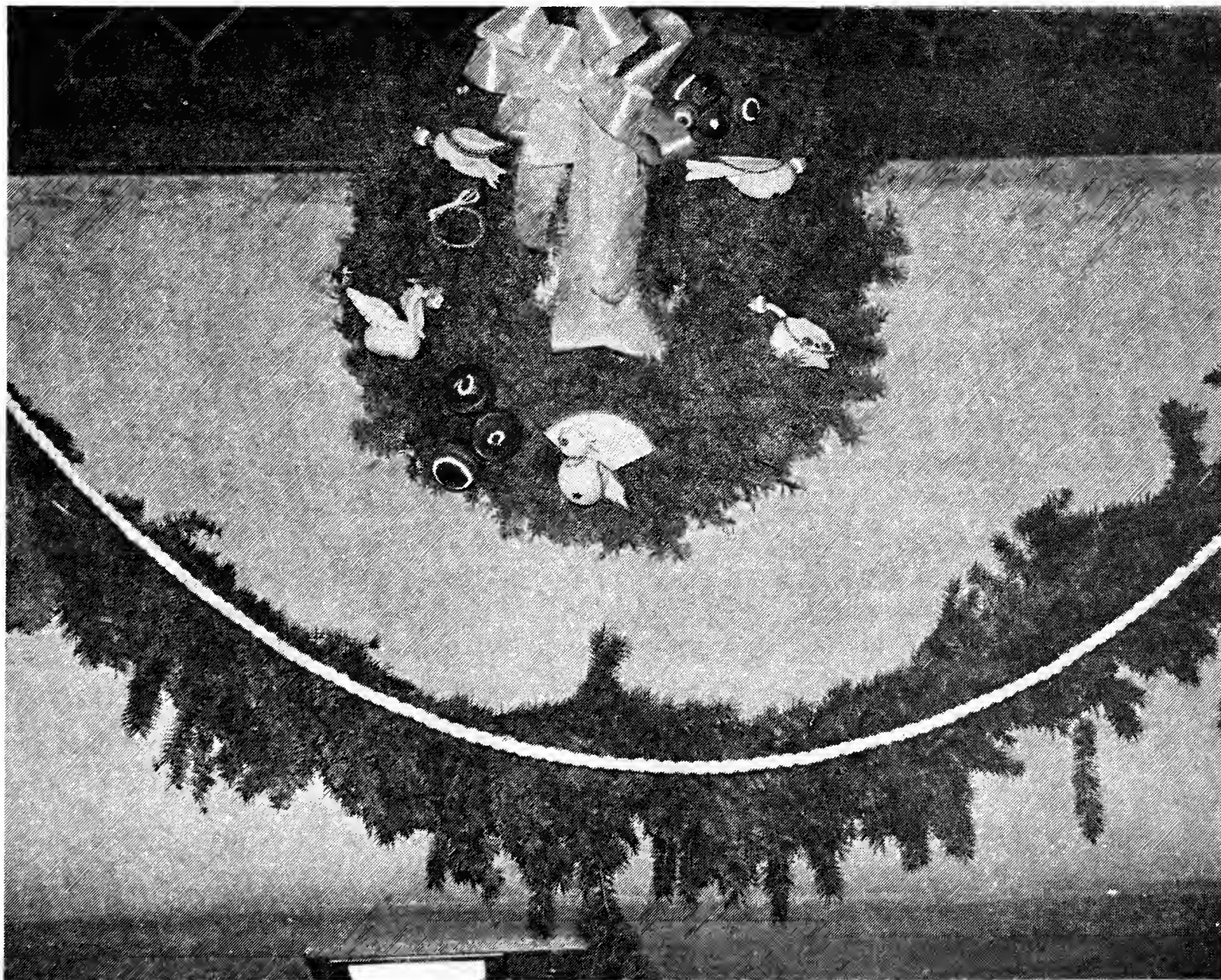
The Gardens also offered six classes in conjunction with the National Junior Horticulture Association and six Art Workshops for Children. They were taught by Mr. Lewis.

Two lectures were offered: Mr. Eickhorst spoke on "Rhododendrons and Azaleas in Denver — Why Not?" and Mr. Hagener on "Wild Flowers of Northern Montana and Southern Alberta."

Mrs. Hayward taught two guide classes — Tropical Plants of the Conservatory, and volunteers conducted tours of the Conservatory for 9390 people.

A series of 11 free films was shown monthly (except May) to an average attendance of 33 people.

#### Christmas Comes to the Lobby



## Use of Facilities

The facilities of Botanic Gardens were used constantly and fully in 1976. The turnstile at the East Gateway recorded 275,779 visitors during the year, again a new record. Meetings, lectures, programs, and shows in Horticulture Hall were attended by 10,896 persons. Attendance at classes and meetings in the lecture rooms of the Education Building reached 10,197, while 4,896 persons attended meetings in Botanic Gardens House.

Several hundreds attended such events as the Membership Dinner, Rose Symposium, Gladiolus and Bulb Sale, Historic Denver Tour of the House, Membership Plant Give-away, Colorado Watercolor Society Exhibition, and the Children's Garden Graduation.

Visitors numbered in the thousands at each of the following: African Violet Show and Sale, Annual Plant Sale (estimated at more than 19,000), Ikebana International Show, Iris Society Show, Denver Bonsai Club Show, Gladiolus Show, Rose Society Show, Dahlia Society Show, Potter's Guild Show and Sale, Denver Orchid Society Show, Gift Shop Christmas Sale, and the Audubon Society Exhibit and Sale.

Denver Botanic Gardens was host to the western regional meeting of the American Association of Botanical Gardens and Arboreta in July, acquainting many prominent horticulturists with the facilities and accomplishments of our institution. Registrants were taken on an all-day field trip including the Pesman Nature Trail on Mount Goliath, Summit Lake, Mt. Evans, Idaho Springs, and Central City.

## Publications

*The Green Thumb*, quarterly magazine of Denver Botanic Gardens, observed the Centennial - Bicentennial year by presenting a number of articles pertaining to horticultural history that were outstanding. Included were "Old-fashioned House Plants," "Harison's Yellow Rose," "The Garrison Frieze," "Cemetery to Conservatory," in two parts, "About Seeds and Seedsmen," "Exotics of Colorado — Peach," and "Bur Oak," "Colorado's Horticultural Pioneers," "The Clements in Colorado," "Centennial Tree Watching," and others. On the first of April Dr. William H. Anderson, Jr. and his wife Mrs. Gilberta T. Anderson, became editors of *The Green Thumb*, succeeding Dr. Patricia Smith.

The monthly *Green Thumb Newsletter*, featuring instructive and timely articles on gardening by Dr. J. R. Feucht, was published regularly during the year edited by Miss Margaret Sikes.

Mrs. Eileen Bloustein continued as editor of the *Jolly Green Gardener* for junior members, working with Ms. Beverly Nilsen.

A revised edition of the *Conservatory Plant Guide*, in constant use by visitors to the conservatory, was produced this year under the supervision of Mrs. Peg Hayward.

## Helen Fowler Library

The Helen Fowler Library continued its steady growth and that meant increased activity in every way.

Of the 26,296 people who came to the Library during the year, over 10,000 used its books and services in some way. Members of the staff of Denver Botanic Gardens used those books and services 1194 times. Volunteers, who are indispensable to the library operation, put in 4,449 hours. There were 3089 phone calls for information, and 5543 books and 451 pamphlets were circulated.

New memberships in Denver Botanic Gardens, originating in the Library, totaled 328.

During the year, 796 books and 40 periodicals were added to the Library collection, bringing the total number of books to 7043. New acquisitions included the *Proceedings of the International Plant Propagators' Society* from the beginning – 1952 through 1975, complete; the new *Encyclopaedia Britannica* (15th edition); and many new books, reflecting an increased interest in many areas, particularly on orchids, bromeliads, and the plants of South Africa. Centennial and Bicentennial articles in Botanic Gardens' publications stimulated some fine gifts to the Library, such as the Barteldes seed catalogs since 1906 and the horticultural manuscripts of D. M. Andrews.

A large part of the Library's income came from the annual sale of donated used books, held in conjunction with the Plant Sale. Persons and organizations who donated funds and gifts of books during the year included the Associates of Denver Botanic Gardens, Tremont Foundation, Applewood Seed Co., National Science Foundation, Mrs. Grace Ramsey Memorial, Cherry Hills Heights Garden Club, John Clark Coe, Extension Club Rangerettes, Helen White, Crestmoor Garden Club, and Coors Memorial (Perennial Garden Club).

### **"Doctor Green"**

The popular program of answering questions on gardening and horticulture during two two-hour periods each week, gets larger and larger. The Gardens received 3,500 recorded calls (perhaps 5,000 calls in all) during the year, in addition to the hundreds of inquiries from people who appeared in person to obtain help. This service required the time and expertise of three competent members of the staff during those periods.

Samples from an abbreviated list: My jade plant, one foot tall, has started dropping leaves. I've had it a month and haven't watered it . . . How to plant a coconut . . . What to do about mealy bugs, gnats, aphids, mites, drooping or dropping of leaves, brown spots, black spots . . . Landscaping with evergreens for a car dealer . . . Swedish ivy turns my hands red . . .

### **Kathryn Kalmbach Herbarium**

In addition to the routine work of any herbarium, the volunteer staff of Kathryn Kalmbach Herbarium has spent many hours in public relations, answering numerous questions about plants and helping individuals identify plants from a few unknowns to large collections. Several slide collections were also identified.





Several classes, both high school and college level, came to learn about the Herbarium and to learn how to prepare and mount specimens.

On the display balcony, the seasonal exhibit of fresh materials, changed weekly, has been a valuable aid for plant identification and always interests visitors.

Because of Colorado's Centennial year, several old private herbaria were displayed for their historical interest, and one case featured Alice Eastwood, an early Denver botanist.

During the month of January, approximately 2000 visitors came to the display balcony to view the Pemberton collection of botanically accurate plant paintings, on loan to Botanic Gardens from the University of Colorado.

## **Mycology Laboratory and Herbarium**

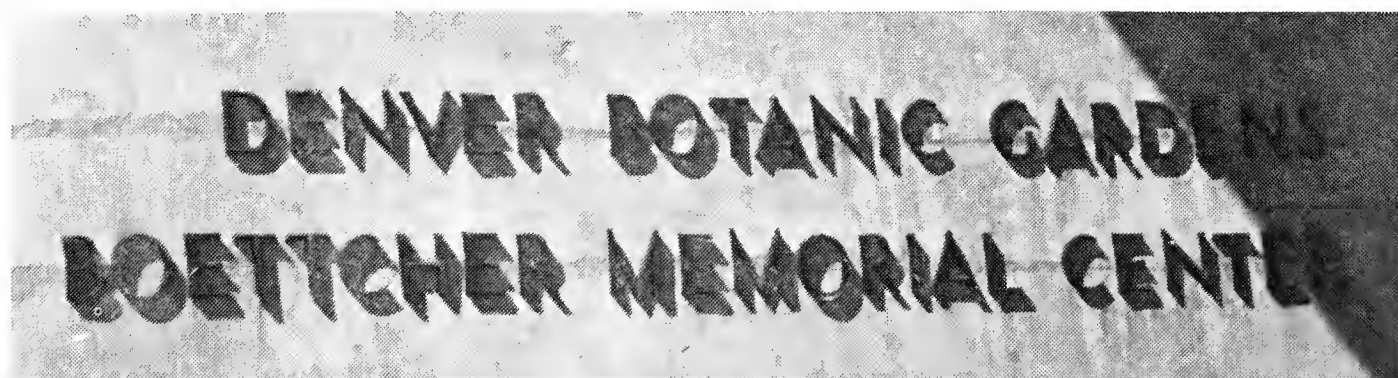
Under the direction of Dr. D. H. Mitchel, Honorary Curator of Mycology, the Mycology Laboratory and Herbarium continued its vigorous activities in the areas of research, education, and community service.

During 1976 over 1000 specimens of fungi were collected, described, photographed, studied microscopically, dried, labeled, indexed, and stored for further study. Specimens were exchanged with other herbaria and specimens of species of poisonous mushrooms were collected, dried, and shipped to biochemists at the University of Michigan and the University of Washington to assist them in research projects in isolation and identification of mushroom poisons.

Publications in 1976: Mitchel, D. H. and Alexander H. Smith, "Notes on Colorado Fungi II: Species of *Armillaria* (Fr.) Kummer (*Agaricales*)," *Mycotaxon* 4(2):513-533, October/December, 1976. Mitchel, D. H., "Mushroom Poisoning: Colorado Experience 1972-1975," *Rocky Mountain Medical Journal* 73(6): 324-331, November/December, 1976. Thomas, H. W., D. H. Mitchel and B. W. Rumack, "Poisoning from the Mushroom *Stropharia coronilla* (Bull. ex (Fr.) Quel," *The Journal of the Arkansas Medical Society* 73:8: 311-312, December, 1976. The Denver Botanic Gardens paid for reprints of the first two of these articles.

Work has continued with the Rocky Mountain Poison Center in the annual updating of the section on mushroom poisoning in *Poisindex* and, in collaboration with Dr. A. H. Smith, in continuing the series of publications on Colorado fungi. The manuscript has been completed for a book on mushroom poisoning which will be published in 1977.

Dr. Mitchel was appointed Director of the Central and Southern Rocky Mountain Region in a national project for the collection and study of the fungus flora of the continental United States, and Denver Botanic Gardens Herbarium was selected as the repository for collections from this region.



## **Student Intern Program**

The student intern arrangements, whereby high school and college students put in various periods of time working at Botanic Gardens is of obvious benefit to the students and to the Gardens. In 1976 these young people took part in the program:

Sue Scubal of East High School in Denver came to the Gardens through the Denver Public Schools program. She worked here four days a week, eight hours a day, from January to June, serving in many different phases of our operations. Maureen O'Shea of Bear Creek High School and Toni Arnold of Mountain Open High School in Evergreen, also worked some months at the Gardens.

In the summer two young women, Judy Golden of the University of Northern Colorado, and Anita Hall, a graduate of Colorado State University, worked regular 40-hour weeks at every level, getting complete exposure to all phases of botanical gardens work. They weeded and watered in the outside gardens, they worked in the herb garden, in the children's gardens, in the mycology laboratory, in the library; they went on field trips and attended classes (reporting on both); they worked in the greenhouses, conservatory, and the lobby, and wrote for the newsletter. They even learned about the administration by assisting the director. They did their work well, made many friends, and made themselves very useful.

## **Trip to Great Britain**

The Botanic Gardens sponsored a tour of thirty of its members to visit gardens in the British Isles from May 24 through June 14, 1976. Each person in the party obtained a membership in the Royal Horticultural Society which enabled him to attend the famed Chelsea Flower Show in London, acknowledged as the world's finest, on the special day reserved for members only. Tour conductor for Tourizons International was Mr. Herbert I. Jones, member of the Gardens' Board of Trustees. Tour leader for the Gardens was Dr. William G. Gambill, Jr., Director. In Britain the group was highly favored by the presence of Mr. T. Hope Findlay, recently retired Head Gardener to the Queen. Mr. Findlay served as horticultural interpreter in the various gardens visited, where he was well known because of his fine reputation in the British Isles.

The group travelled over 2,000 miles by private motor coach in England, Wales, and Scotland, visiting 24 famous gardens in those countries. From London the tour visited the Royal Botanic Gardens at Kew, Hampton Court Gardens, Chartwell, Sheffield Park Gardens, and the Savill and Valley Gardens in Windsor Great Park, surrounding Windsor Castle. In the London area the travellers visited the Royal Horticultural Society's gardens at Wisley, and Exbury hybrid azaleas. Travelling through the Cotswolds in western England made possible visits to the Roman ruins at Bath and to Westonbirt Arboretum. Bodnant Gardens in Wales was enjoyed on a side trip from Chester. A brief stay in the Lake Country was followed by a three-day visit to Edinburgh, the Royal Botanic Gardens there, as well as several historic sites in that city. Among other gardens visited were those in Oxford, Cambridge, Harrogate, and Stratford-on-Avon, where the group attended a Shakespearean play. Cathedrals at Durham, Coventry, Lincoln, York, and in London were included in what was considered a truly memorable tour.

## Personnel

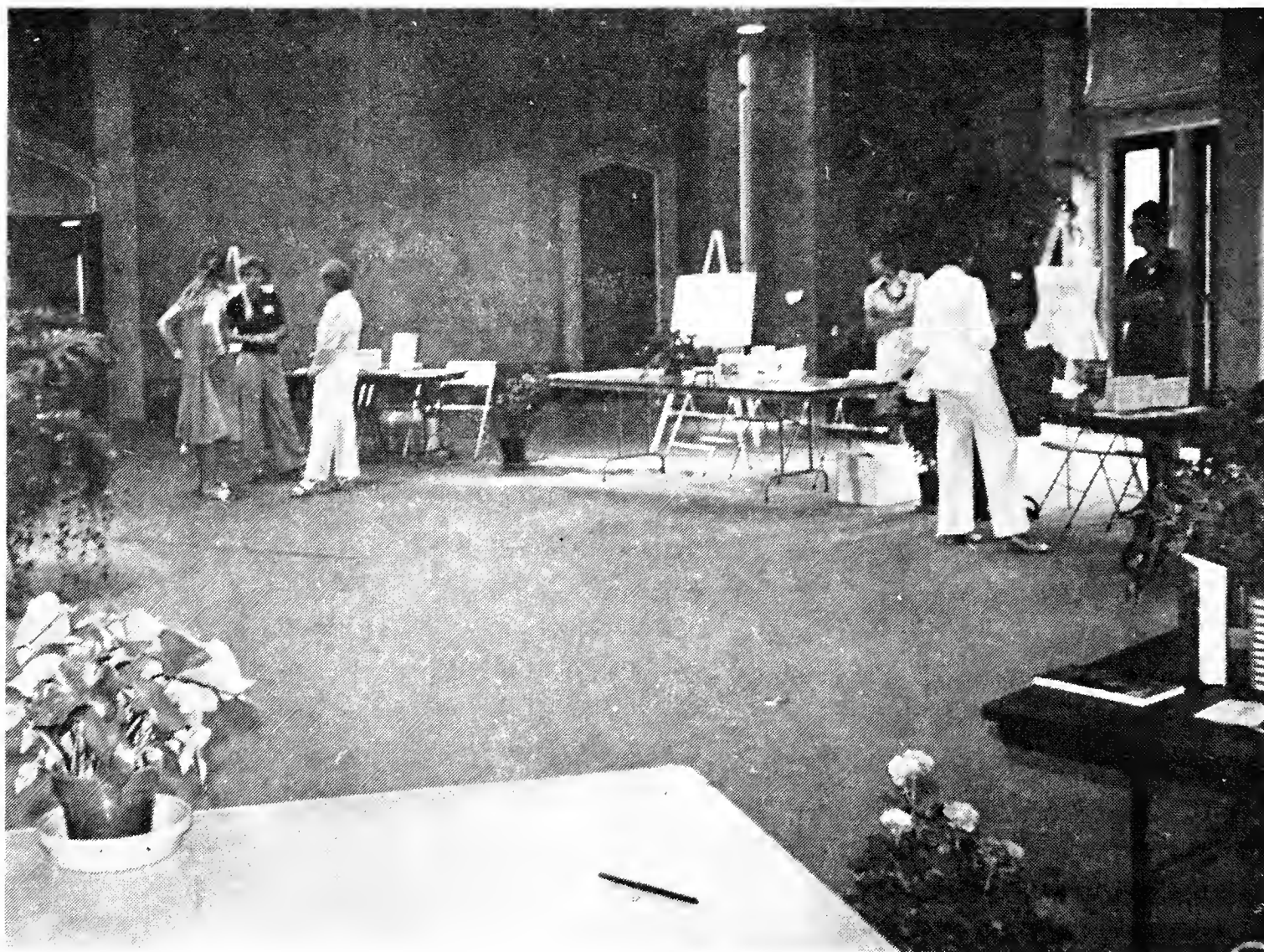
A new Superintendent of the Conservatory came to Denver Botanic Gardens at the beginning of 1976. Andrew Pierce was put in charge of all aspects of growing and displaying plants in the tropical conservatory, four greenhouses, and the lobby court display area of the Education Building. Mr. Pierce was fittingly introduced to our members as the featured speaker at the Annual Membership Dinner in March.

A native of England, Mr. Pierce had been employed for the previous twelve years as the horticultural officer with the Department of Agriculture and Fisheries in Bermuda. His training includes a certificate in General Horticulture from the Kent Horticultural Institute; the National Diploma in Horticulture and the National Certificate in Elementary Horticulture, both from the Royal Horticultural Society; and the Student Gardener's Certificate from Royal Botanic Gardens, Kew.

All the members of the staff deserve commendation for their loyalty, dedication and hard work during the year. They are the ones upon whom the great responsibility rested to carry out the endless day-to-day tasks which kept the Gardens growing and thriving. It was due to these people that 1976 was a great year for Denver Botanic Gardens.

At the end of December, 1976, due to a cut in the 1977 City budget of around 16%, the Botanic Gardens was forced to drop four permanent employees and one temporary employee from its roster. The loss of these employees and their positions will be keenly felt, as will the cut of 50% in the City budget for supplies, materials, and services. It is certain that continued expansion of projects in the Gardens dependent upon the City budget will be sharply curtailed.

### Authors' Autograph Party



# CHATFIELD ARBORETUM

Newell Grant

Chatfield Arboretum is a 750-acre parcel of land along the western edge of the Chatfield Recreation area which the Gardens, through the City and County of Denver, leases from the U.S. Army Corps of Engineers. The Trustees have determined that it will be developed as an arboretum. The biggest portion is in a 350-acre piece straddling lower Deer Creek; the remaining 400-acres is a "tail" of varying width running south for several miles.

Several events of real significance occurred in 1976 that bring the Arboretum closer to existence. Perhaps the most important was the adoption by the Board of Trustees of a Statement of Purpose for Chatfield Arboretum:

## Statement of Purpose — Chatfield Arboretum

The Chatfield Arboretum of the Denver Botanic Gardens is to be planned and developed as a permanent collection basically of trees and shrubs gathered with the broad purpose of providing information and pleasure to the public. The collection of plants should include native and introduced species from as large a range of habitats as possible, and should include endangered and exotic species. Educational programs should be conducted which could range from classes to tours to experimental trials of various plants and scientific research in botany, horticulture, ecology, and related areas.

The Visitors' Center shall include displays to further the educational programs.

The historic Hildebrand Farm buildings shall be restored as a reminder that long range environmental changes have occurred and will continue to do so — from the development of virgin prairie to productive farm land through and beyond the 20th Century urbanization.

The Chatfield Arboretum is to be planned as a facility which will benefit our community through its aesthetic value and as an important information center.

It is the intention of the Trustees of Denver Botanic Gardens that the development at the Chatfield Arboretum be conducted in accordance with the highest professional standards.

This is expected to guide the planners and designers who will be developing the Arboretum's ultimate form.

Progress was made on several fronts which are interesting:

- A very detailed contour map, with two-foot contours, was prepared of the Arboretum site. This is expected to be invaluable to planners and designers.
- The U. S. Soil Conservation Service completed detailed soil tests and has provided complete information on its findings. The Service has published a manual describing the soils. One type of soil not previously encountered was named *Botanicum* after the Denver Botanic Gardens.





Hildebrand House – Chatfield Arboretum

Bear Creek Cabin



# CHATFIELD ARBORETUM

Newell Grant

Chatfield Arboretum is a 750-acre parcel of land along the western edge of the Chatfield Recreation area which the Gardens, through the City and County of Denver, leases from the U.S. Army Corps of Engineers. The Trustees have determined that it will be developed as an arboretum. The biggest portion is in a 350-acre piece straddling lower Deer Creek; the remaining 400-acres is a "tail" of varying width running south for several miles.

Several events of real significance occurred in 1976 that bring the Arboretum closer to existence. Perhaps the most important was the adoption by the Board of Trustees of a Statement of Purpose for Chatfield Arboretum:

## Statement of Purpose – Chatfield Arboretum

The Chatfield Arboretum of the Denver Botanic Gardens is to be planned and developed as a permanent collection basically of trees and shrubs gathered with the broad purpose of providing information and pleasure to the public. The collection of plants should include native and introduced species from as large a range of habitats as possible, and should include endangered and exotic species. Educational programs should be conducted which could range from classes to tours to experimental trials of various plants and scientific research in botany, horticulture, ecology, and related areas.

The Visitors' Center shall include displays to further the educational programs.

The historic Hildebrand Farm buildings shall be restored as a reminder that long range environmental changes have occurred and will continue to do so – from the development of virgin prairie to productive farm land through and beyond the 20th Century urbanization.

The Chatfield Arboretum is to be planned as a facility which will benefit our community through its aesthetic value and as an important information center.

It is the intention of the Trustees of Denver Botanic Gardens that the development at the Chatfield Arboretum be conducted in accordance with the highest professional standards.

This is expected to guide the planners and designers who will be developing the Arboretum's ultimate form.

Progress was made on several fronts which are interesting:

- A very detailed contour map, with two-foot contours, was prepared of the Arboretum site. This is expected to be invaluable to planners and designers.
- The U. S. Soil Conservation Service completed detailed soil tests and has provided complete information on its findings. The Service has published a manual describing the soils. One type of soil not previously encountered was named *Botanicum* after the Denver Botanic Gardens.





**Hildebrand House – Chatfield Arboretum**

**Bear Creek Cabin**



- The most apparent on-site progress made during the year was the moving of the old schoolhouse from its location near Deer Creek to a site near the paved parking area. This move took place in the late fall, and we hope that renovation will begin sometime in 1977 to convert what are now small dark rooms into a Visitors' Reception and Interpretive Center. Having the schoolhouse moved took a great deal of work, but at last it is finally moved. This is the first visible progress toward creating the Arboretum.

- The Chatfield Committee was, at the end of the year, in the process of selecting a planner/designer to develop a long range plan for the Arboretum. The selection of that planner/designer, and the guidance we expect will surely be 1977's most important event for Chatfield Arboretum.

- The Gardens learned that their application for matching funds from the Land and Water Conservation Fund was approved. This fund, which is made up of federal revenues from the sale of offshore oil leases and similar sources, is available for distribution to provide community outdoor recreation areas. It is administered in Colorado by the Board of Parks and Outdoor Recreation. The Chatfield application was filed for funds to renovate the schoolhouse and to begin planting and landscaping the entrance road. We have already ordered about 1,340 trees and 2,110 shrubs to be planted in spring of 1977; planting will be done by the Gardens. Please let us know if you would like to help! The amount of the grant is half of what we spend, up to a total of \$65,000.

- Another application was filed just before the end of the year, with the hope that we would receive another grant. This was filed to help with further planning and landscaping costs, to start development of a suitable watering system, and to construct some nature trails and work access roads.

## **The Prospects for 1977**

The year of 1977 promises to be very important in the development of the Arboretum. The first planning efforts will be begun, and we should begin work towards implementing elements of that planning. We have described above our efforts to seek matching funds for the Arboretum development; the expenditure of those funds will be a major event which will propel the creation of the Arboretum much closer to reality. And nothing, of course, will make it more credible than actually beginning planting.

And, in conclusion, one small event offers a glimpse of the excitement that we feel the Chatfield Arboretum will hold. Dr. Gambill and I became aware, late in December, of a small group of individuals, not then members or volunteers of the Gardens, who had discovered the beauty of the site and the schoolhouse. They were very enthusiastic and eager to help in any way they could to further the project. To me, the heartening thing about this was the realization that Chatfield Arboretum has also infected others — not otherwise associated with the Gardens — with its beauty, and that it offers a very large potential for broadening the activities and community support for the Denver Botanic Gardens as a whole. We fully intend to do all we can in 1977 to deserve that support.



**DENVER BOTANIC GARDENS, INC.**  
909 York Street  
Denver, Colorado

**FINANCIAL STATEMENT**  
December 31, 1976

**ASSETS**

Current assets:

Checking Account	23,478	
Savings Accounts	216,668	
Investment Trust Account	101,630	
Tax Reserve, Etc.	<u>3,746</u>	345,522

Other Assets:

Conservatory	882,894	
Education Building	861,454	
Greenhouses	159,001	
Other Real Estate	617,239	
Master Plan Development	839,823	
Equipment Owned	<u>19,775</u>	<u>3,380,186</u>

<b>TOTAL</b>		<b><u><u>3,725,708</u></u></b>
--------------	--	--------------------------------

**EQUITY ACCOUNTS**

Liabilities:

Notes Payable	195,679	
Rent Deposits	<u>1,370</u>	197,049

Fund Accounts:

Represented by Current Assets	345,522	
Represented by Other Assets	<u>3,183,137</u>	<u>3,528,659</u>

<b>TOTAL</b>		<b><u><u>3,725,708</u></u></b>
--------------	--	--------------------------------

**ACCOUNTANT'S OPINION**

I have examined the balance sheet of the Denver Botanic Gardens, Inc. as of December 31, 1976. The examination was made in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as were considered necessary in the circumstances.

In my opinion, the accompanying balance sheet presents fairly the financial position of the Denver Botanic Gardens, Inc. at December 31, 1976.

**J. D. Vander Ploeg**  
Certified Public Accountant

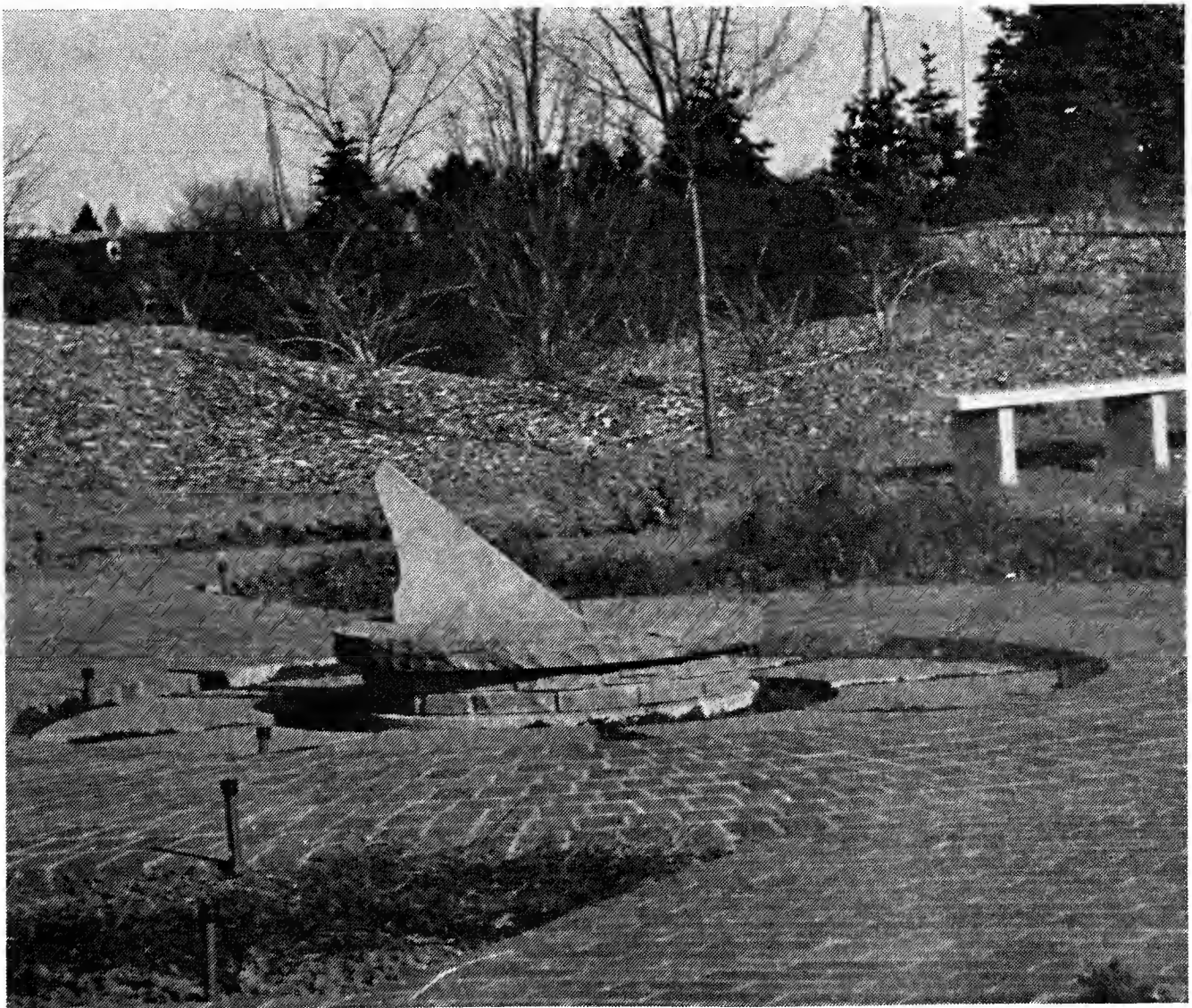
## MEMORIAL GIFTS

Memorial contributions have been received during 1976  
for the following persons whose names have been  
inscribed in the Denver Botanic Gardens Book of Memories.

Helen S. Beise  
Mrs. Robert G. Bosworth  
Anna Emily Bruderlin  
Agnes Burright  
Mrs. Adolph Coors III  
Mrs. Gilbert Davis  
Geneva Eldridge  
Florence Fry  
Ethel Gillette  
Ruth Millett Goodyear  
Mrs. David F. Hall  
Marmaduke B. Holt, Jr.  
Dona Jaeke

David Krohn  
Cora B. Mayo  
Thomas M. McAndries  
Mrs. Margaret Mead  
Mrs. Wm. P. Mellen  
Hazel Moore  
Bertha Mossman  
Isabel T. Peel  
Mrs. Grace Ramsay  
John Scott  
Howard H. Sidwell, Jr.  
John Stein  
Verla Wiscombe

Memorial Sundial



# THE VOLUNTEERS

## Their Organizations and Committees.

### ASSOCIATES OF DENVER BOTANIC GARDENS

Mrs. Herbert Glick . . . . . *President, 1976*  
Mrs. William B. Collister . . . . . *Guide Committee Chairman*  
Mrs. Mary Secrest . . . . . *Gift Shop Committee Chairman*  
Mrs. Richard W. Hanselman . . . . . *Guide Schedule Committee Chairman 1975-76*  
Mrs. Julian Duxbury . . . . . *Guide Schedule Committee Chairman 1976-77*  
Mrs. William M. Falion, III . . . . . *Information Desk Chairman*

### AROUND THE SEASONS CLUB

Mrs. D. L. Christenson . . . . . *President, 1976-77*

### DENVER BOTANIC GARDENS GUILD

Mrs. T. W. Wrenn, Jr. . . . . *President 1975-76*  
Mrs. Harry Wadsworth . . . . . *President 1976-77*  
Mrs. Loring Brock . . . . . *Terrace & Garden Tour Chairman 1976*

### GARDEN CLUB OF DENVER

Mrs. Donald C. Campbell . . . . . *President 1976-77*

A Worker's Hands



**CHATFIELD COMMITTEE**

Mr. Newell M. Grant, Chairman  
Mrs. D. A. Andrews-Jones  
Mr. J. F. Baxter  
Mr. Edward P. Connors  
Mr. Herbert I. Jones  
Mr. Harry B. Kuesel  
Mrs. Willett S. Moore  
Dr. Moras L. Shubert

Mr. Con Tolman  
Miss Exie White  
Mr. Rudy Woodruff  
Dr. William G. Gambill, Jr., Ex-Officio  
Mr. John C. Mitchell, Ex-Officio  
Mr. Glenn Park, Ex-Officio  
Mr. Lee Schwade, Ex-Officio

**CHILDREN'S GARDEN COMMITTEE**

Mrs. James Layden, Chairman  
Dr. John R. Durrance  
Mr. Richard Hannigan  
Mrs. Ann Holland  
Mrs. Lorena Seney  
Mrs. James Thompson

Mrs. Irene Vittetoe  
Mrs. James J. Waring  
Dr. William G. Gambill, Jr., Ex-Officio  
Ms. Beverly Nilsen, Ex-Officio  
Mr. Lee Schwade, Ex-Officio

**CHILDREN'S GARDEN EXTENSION**

Mr. Harry B. Kuesel, Chairman  
Mr. Anthony J. Makowski, Principal,  
Barrett Elementary School  
Mr. Orville K. Jacobs,  
Barrett Elementary School

Ms. Beverly Nilsen, Ex-Officio  
Mr. Glenn Park, Ex-Officio  
Mr. Lee Schwade, Ex-Officio  
Dr. William G. Gambill, Jr., Ex-Officio

**DEVELOPMENT AND PUBLIC RELATIONS COMMITTEE**

Mrs. John Brooks, Jr., Chairman  
Mrs. Suzanne Ash  
Mrs. Donald C. Campbell  
Mrs. John F. Falkenberg  
Mrs. Richard W. Hanselman  
Mrs. Richard A. Kirk

Mr. Alexander L. Kirkpatrick  
Mrs. Norman F. Patrick  
Mrs. J. V. Petersen  
Mrs. William Stanley  
Dr. William G. Gambill, Jr., Ex-Officio  
Mr. Glenn Park, Ex-Officio

**EDITORIAL COMMITTEE**

Mrs. J. V. Petersen, Chairman  
Dr. William H. Anderson, Jr.  
Mrs. Gilberta T. Anderson  
Mrs. Julia Andrews-Jones  
Mrs. Suzanne Ash  
Mrs. Paul A. Bloustein  
Mrs. William H. Crisp  
Mrs. George H. Garrey  
Mrs. Phil Hayward

Mrs. Robert M. Kosanke  
Dr. Moras L. Shubert  
Mrs. J. P. Steele, Jr.  
Dr. Janet C. Wingate  
Dr. Helen M. Zeiner  
Dr. William G. Gambill, Jr., Ex-Officio  
Ms. Solange G. Gignac, Ex-Officio  
Miss Margaret Sikes, Ex-Officio



## EDUCATION COMMITTEE

Dr. Moras L. Shubert, Chairman  
(Univ. of Denver)  
Dr. James R. Feucht (C.S.U. Horticultural  
Extension Service)  
Mrs. Phil Hayward  
Mr. Kenneth J. Mills (Denver  
Public Schools)  
Mr. James O'Shea (Community College of  
Denver, North Campus)

Mrs. William A. Steele (Metropolitan  
State College)  
Mr. James Trammel (Arapahoe Community  
College)  
Mrs. Theodore B. Washburne  
Dr. William G. Gambill, Jr., Ex-Officio  
Ms. Solange G. Gignac, Ex-Officio  
Miss Margaret Sikes, Ex-Officio  
Mr. Lee Schwade, Ex-Officio

A Garden View



## EXECUTIVE COMMITTEE

Mr. John C. Mitchell, President  
Mr. Edward P. Connors, Vice President  
Mr. Richard A. Kirk, Vice President  
Mrs. James J. Waring, Vice President  
Dr. Moras L. Shubert, Secretary

Mrs. Frank B. Freyer, II, Assistant Secy.  
Mr. Alexander L. Kirkpatrick, Treasurer  
Mrs. Donald C. Campbell  
Dr. John R. Durrance

## FINANCE COMMITTEE

Mr. Alexander L. Kirkpatrick, Chairman  
Mr. J. F. Baxter  
Mr. O. Ben Haley, Jr.

Mr. Richard A. Kirk  
Mr. Lawrence A. Long  
Mr. John C. Mitchell

## HERBARIUM COMMITTEE

Dr. Helen M. Zeiner, Chairman  
Mrs. Suzanne Ash  
Dr. E. H. Brunquist  
Mrs. Page Edwards  
Mrs. Marjorie Shepherd

Dr. Janet C. Wingate  
Mrs. Leslie P. Witte  
Mrs. F. Richard Yeatts  
Dr. William G. Gambill, Jr., Ex-Officio

## HORTICULTURAL ADVISORY COMMITTEE

Mr. Kenneth G. Wilmore, Chairman  
Dr. John R. Durrance  
Mr. John C. Mitchell  
Mrs. Willett S. Moore  
Mr. Chris G. Moritz  
Mrs. Jane Silverstein Ries  
Dr. Moras L. Shubert

Mr. Harry Swift  
Mr. William R. Thurston  
Mr. Larry Watson  
Dr. William G. Gambill, Jr., Ex-Officio  
Ms. Beverly Nilsen, Ex-Officio  
Mr. Glenn Park, Ex-Officio

## HOUSE COMMITTEE

Mrs. Harley G. Higbie, Jr., Chairman  
Mrs. George M. Canon  
Mrs. George H. Garrey  
Mrs. Richard A. Kirk

Mrs. James J. Waring  
Miss Ruth Hawkins, Ex-Officio  
Dr. William G. Gambill, Jr., Ex-Officio

## LIBRARY COMMITTEE

Miss Rachael Hauck, Chairman  
Miss Lucy M. Crissey  
Miss Geneva Eldridge (Deceased)  
Mrs. John F. Falkenberg

Mrs. Bruce Jackson  
Mrs. James White  
Ms. Solange G. Gignac, Ex-Officio  
Dr. William G. Gambill, Jr., Ex-Officio

## LOBBY COURT COMMITTEE

Mrs. Donald C. Campbell, Chairman  
Mrs. Frank B. Freyer, II  
Mrs. Willett S. Moore

Mr. O. Ben Haley, Jr.  
Mr. Larry Latta, Ex-Officio  
Mr. Andrew Pierce, Ex-Officio

## NOMINATING COMMITTEE

Mr. Richard A. Kirk, Chairman  
Mr. Charles C. Nicola  
Mr. James C. Owen, Jr.

Mrs. Theodore B. Washburne  
Mr. John C. Mitchell, Ex-Officio

## PLANNING COMMITTEE

Mr. Edward P. Connors, Chairman  
Dr. John R. Durrance  
Mrs. John F. Falkenberg  
Mr. John C. Mitchell

Mr. James C. Owen, Jr.  
Mrs. James J. Waring  
Dr. William G. Gambill, Jr., Ex-Officio  
Mr. Glenn Park, Ex-Officio

## PLANT SALE COMMITTEE

Mrs. John F. Falkenberg, Chairman  
Mr. Edward P. Connors  
Mrs. Phil Hayward  
Mrs. William C. Jackson, Jr.  
Mrs. Graham B. Morrison  
Mrs. Norman F. Patrick

Mrs. Henry W. Toll, Jr.  
Mrs. Theodore B. Washburne  
Ex-Officio Members:  
1976 Annual Plant Sale Co-Chairmen:  
Mrs. Herbert Franson  
Mrs. Richard W. Hanselman

## REAL ESTATE COMMITTEE

Mrs. J. F. Baxter  
Mr. Edward P. Connors  
Mrs. John F. Falkenberg  
Mr. John F. Falkenberg  
Mr. Lawrence A. Long

Mr. Alexander L. Kirkpatrick  
Mr. John C. Mitchell  
Mrs. James J. Waring  
Dr. William G. Gambill, Jr., Ex-Officio  
Ms. Iris O'Connor, Ex-Officio

**The Fountain**



## Centennial Garden



## Picture Credits

Front Cover, Pgs. 1, 2, 5, 7, 10, 13, 15, 17, 20, 22, 24, 27, 28, 30, 32,  
Inside Back Cover, Outside Back Cover — *The Green Thumb File*

Pg. 3 — Virginia Simmons

Pgs. 4, 19 — Pauline Roberts Steele



# ANNUAL REPORT

DENVER BOTANIC GARDENS  
909 YORK STREET  
DENVER, COLORADO 80206

NON-PROFIT  
ORG.

U. S. POSTAGE  
**PAID**

Permit No. 205  
Denver, Colorado

**DO NOT FOLD**

ADDRESS CORRECTION  
REQUESTED RETURN  
POSTAGE GUARANTEED

**Krohn House**













